Final Report Phase I RCRA Facility Investigation for Appendix I Sites

VOLUME VI

AOC, Spill Pond (Drainage Spillway Behind Building 1030) AOC, Old Pesticide Storage Area



Department of the Air Force Oklahoma City Air Logistics Center Tinker Air Force Base, Oklahoma

September 1994

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Final Report Phase I RCRA Facility Investigation for Appendix I Sites VOLUME VI

AOC, Spill Pond (Drainage Spillway Behind Building 1030)



Department of the Air Force Oklahoma City Air Logistics Center Tinker Air Force Base, Oklahoma

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List of Acronyms_

AFB Air Force Base
AOC area of concern

CAL Corrective Action Levels

CDM CDM Federal Programs Corporation

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

CFR Code of Federal Regulations
CMS Corrective Measures Study

DCQAP Data Collection Quality Assurance Plan

DERP Defense Environmental Restoration Program

DOD U.S. Department of Defense

DQO Data Quality Objective

EID Engineering Installation Division

EMO Environmental Management Operations
EPA U.S. Environmental Protection Agency

FID flame ionization detector

ft/ft foot per foot

GC/MS gas chromatography/mass spectrometry
HSWA Hazardous and Solid Waste Amendments

IRP Installation Restoration Program

IWTP industrial wastewater treatment plant

LSZ lower saturated zone

 $\mu g/kg$ micrograms per kilogram

μg/L micrograms per liter

MCL maximum contaminant level mg/kg milligrams per kilogram

mg/L milligrams per liter

MS matrix spike

MSD matrix spike duplicate

msl mean sea level

NAAQS National Ambient Air Quality Standards

NCP National Oil and Hazardous Substances Pollution Contingency Plan

NPDES National Pollutant Discharge Elimination System

NPL National Priorities List

PA/SI preliminary assessment/site investigation

List of Acronyms (Continued)____

PCE tetrachloroethene

PID photoionization detector

PRC PRC Environmental Management, Inc.

PVC polyvinyl chloride

RCRA Resource Conservation and Recovery Act

RFI RCRA Facility Investigation

RI/FS remedial investigation/feasibility study

ROD record of decision

RPD relative percent difference

SARA Superfund Amendments and Reauthorization Act

SVOC semivolatile organic compound SWMU solid waste management unit

TCE trichloroethene

TOC total organic carbon

TPH total petroleum hydrocarbon

TSD treatment, storage, and disposal (facility)

USACE U.S. Army Corps of Engineers

USC U.S. Code

USDA U.S. Department of Agriculture

USGS U.S. Geological Survey USZ upper saturated zone

UWBZ upper water bearing zoneVOA volatile organic analysisVOC volatile organic compounds

WQS Water Quality Standards

Executive Summary

This report provides a summary of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) conducted at area of concern (AOC), Spill Pond, Drainage Spillway behind Building 1030 (Drainage Spillway), Tinker Air Force Base (AFB), Oklahoma. The report has been prepared to determine whether hazardous constituents as defined by federal regulations have been released into the environment from the Drainage Spillway. The RFI for this unit has been conducted in accordance with the Work Plan prepared by CDM Federal Programs Corporation (CDM). This RFI report presents the following information:

- Site characterization (Environmental Setting)
- Source term definition (Source Characterization), if any
- Degree of contamination (Contamination Characterization)
- Identification of actual or potential receptors
- Analytical results and analysis (Data Analysis)
- Identification of action levels for the protection of human health and the environment (Protection Standards)
- · Conclusions and recommendations for future work.

Tinker AFB is located in central Oklahoma, in the southeast portion of the Oklahoma City metropolitan area, in Oklahoma County. The Base is bounded by Sooner Road to the west, Douglas Boulevard to the east, Interstate 40 to the north, and Southeast 74th Street to the south. The Base encompasses approximately 5,000 acres.

Background. Tinker AFB began operations in 1942 and serves as a worldwide repair depot for a variety of aircraft, weapons, and engines. These activities require the use of hazardous materials and result in the generation of hazardous wastes. These wastes have included spent organic solvents, waste oils, waste paint strippers and sludges, electroplating wastewaters and sludges, alkaline cleaners, acids, FreonTM, jet fuels, and radium paints.

In 1984, Congress amended the RCRA with the Hazardous and Solid Waste Amendments (HSWA), which allow U.S. Environmental Protection Agency (EPA) to require, as a permit condition, a facility to undertake corrective action for any release of hazardous waste or

constituents from any solid waste management unit (SWMU) at a treatment, storage, and disposal (TSD) facility. On January 12, 1989, Tinker AFB submitted its Part B permit application for renewal of its operating RCRA Hazardous Waste Storage facility permit. The final RCRA HSWA permit issued on July 1, 1991, requires Tinker AFB to investigate all SWMUs and AOCs and to perform corrective action at those identified as posing a threat to human health or the environment. The permit specifies that an RFI be conducted for 43 identified SWMUs and two AOCs on the Base. This document has been prepared to determine whether sufficient investigations have been conducted to meet the permit requirements for the Drainage Spillway.

Source Description. The Drainage Spillway is a drainage area located northwest of Building 1030 (PRC Environmental Management, Inc. [PRC], 1989). Building 1030 is located east of SWMU-4, Landfill 2 in the southwestern part of the Base. The Drainage Spillway receives runoff from Building 1030 roof drains and ramp areas and was believed to receive drainage from the wash rack drains.

Site Investigations. The Drainage Spillway was recently added to the Installation Restoration Program (IRP), and no work has yet been conducted at the site. To determine if Building 1030 wash water flows into the storm drains (and thus into the Drainage Spillway) flow/dye tests were performed at the floor drainage trench inside the building. In addition, water was collected from a sump located along the storm drain to characterize the water flowing from the Building 1030 area into the Drainage Spillway.

The first test introduced water colored with yellow dye into the drainage system of Building 1030. Observations were made at the Drainage Spillway outflow, the two sumps east of Building 1030, and several sewer and drainage lines located near the sumps for changes in the flow rate or the presence of yellow dye. No change in flow rate or yellow dye was observed.

Although this first dye test did not conclusively show the destination of the Building 1030 wash water, it did prove that the trench drain is not connected to the sump or the Drainage Spillway.

The second dye test was conducted on March 3, 1994. Water and bright green dye were introduced into the floor grates inside Building 1030, and 27 minutes later a dye plume was observed in a sanitary sewer manhole located approximately 600 feet northwest of the

building. This test proved that the water from the Building 1030 wash area drains to the sanitary sewer system.

A sample of the water held in the sump north of Building 1030 was collected and analyzed to determine the characteristics of the storm drain water. The sump is located along the storm drain line which leads to the Drainage Spillway. This sample was analyzed for volatile organic compounds (VOC), semivolative organic compounds (SVOC), total petroleum hydrocarbons (TPH), and priority pollutant metals. Organic parameters from the water in the sump that were detected above the laboratory detection limits are tetrachloroethene (PCE) at 16 micrograms per liter (μ g/L), trichloroethene (TCE) at 11 μ g/L, cis-1,2-dichloroethene at 110 μ g/L to 120 μ g/L, and total organic carbon (TOC) at 8.5 to 11 milligrams per liter (μ g/L). Metals detected in the source characterization sample were zinc at 0.027 mg/L, iron at 0.11 mg/L, and lead at 0.0077 to 0.012 mg/L.

A total of two soil samples were collected along the Drainage Spillway, which connects the Building 1030 storm drain outfall with Crutcho Creek. These samples were analyzed for VOCs, SVOCs and proprity pollutant metals (aluminum, arsenic, barium, beryllium, cadmium, chromium, chromium VI, copper, iron, lead, mercury, nickel, silver, and zinc). All metals were at levels within the ranges found in the United States Geological Survey (USGS) Report, "Elemental Composition of Surficial Materials from Central Oklahoma," (USGS, 1991). No organic compounds, volatile or semivolatile, were detected above the method reporting limit in the soil. Beryllium was found at 1.1 milligrams per kilogram (mg/kg) in both soil samples, which was above the SWMU corrective action limit (CAL) for soil of 0.2 mg/kg, but was less than the background level of 3 mg/kg. No constituents of concern were found in the sump water or soils.

During the RFI at the Drainage Spillway no monitoring wells were installed, and the borings drilled did not reach the groundwater level. Thus, no groundwater samples were collected, and no information regarding groundwater quality is available from this investigation.

Conclusions. Because no constituents of concern were found in the sump water or the soils and flow testing indicated that the washwater from Building 1030 drained to the sanitary sewers and not to the Drainage Spillway, Building 1030 operations have not impacted the Drainage Spillway. The surface water runoff from the Drainage Spillway is presently being sampled weekly per the NPDES Permit, Storm Water Monitoring Program. No further action is recommended for the Drainage Spillway.

1.0 Introduction

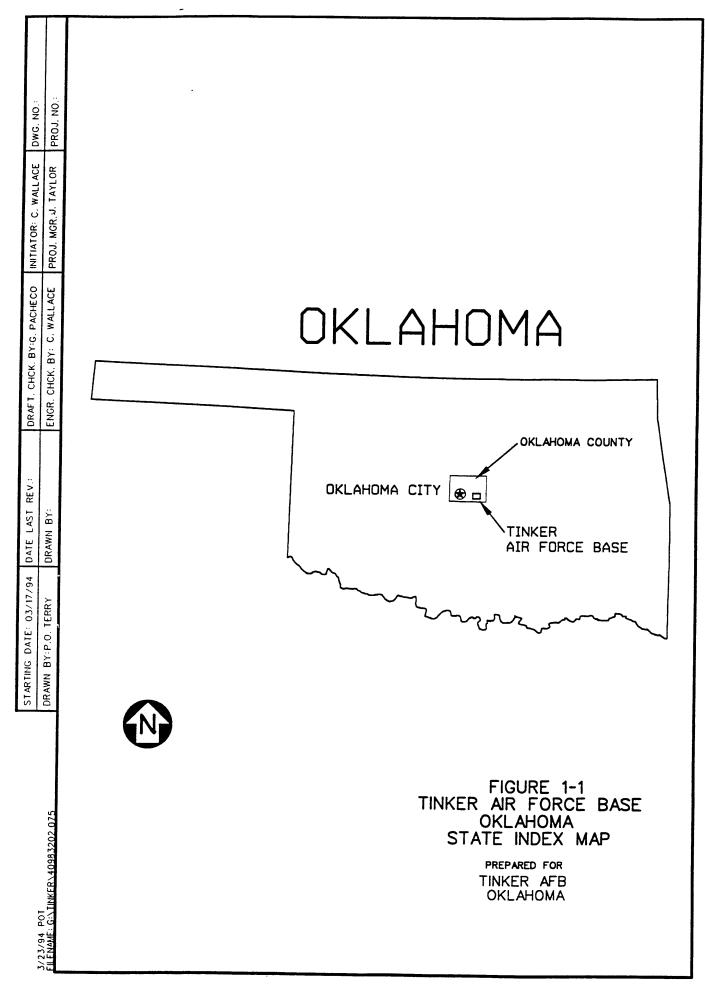
The U.S. Department of the Air Force is conducting an Installation Restoration Program (IRP) at Tinker Air Force Base (AFB), Oklahoma (Figure 1-1). This program intends to identify sites through initial assessments, characterize each solid waste management unit (SWMU) or area of concern (AOC), study and select cleanup methods, if required, and implement a cleanup. In support of this effort, a Phase I Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) was conducted at AOC, Spill Pond, Drainage Spillway behind Building 1030 (Drainage Spillway), at Tinker AFB, Oklahoma (Figure 1-2). This Phase I investigation focuses its efforts on determining if there have been any releases of contamination to the Drainage Spillway resulting from operations in Building 1030.

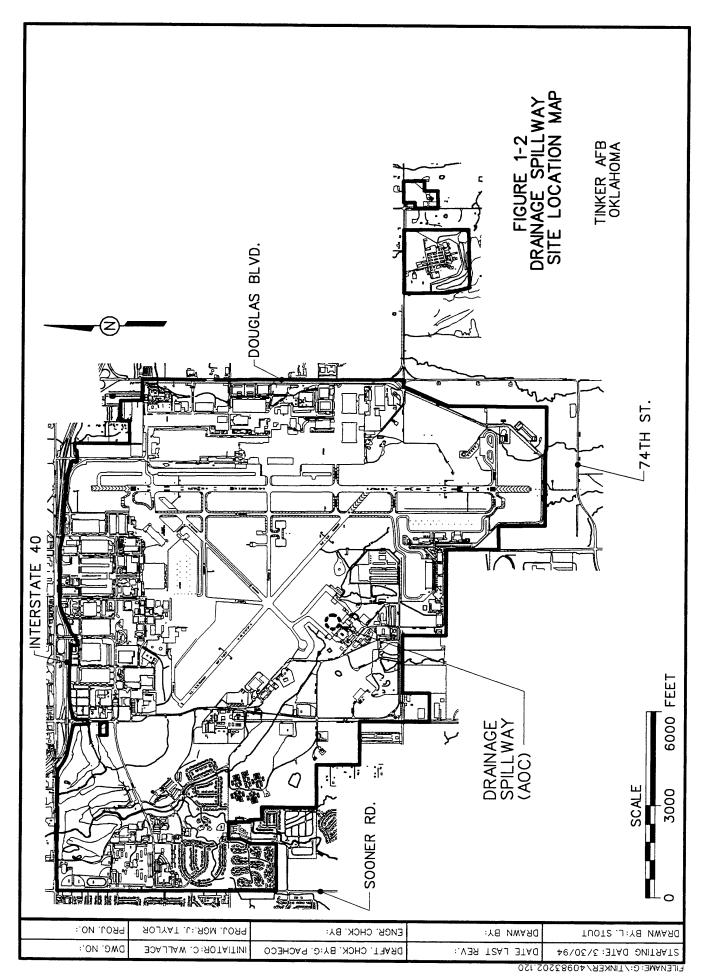
Adequate information must be gathered in a Phase I RFI to support a Phase II investigation, a Corrective Measures Study (CMS), or interim measures, if necessary. A phased approach has been taken by Tinker AFB for the Drainage Spillway site investigation. This phasing of the RFI is in accordance with the U.S. Environmental Protection Agency (EPA) RFI guidance documents and is also the most practical approach for this site where little or no information is available on past practices.

Outlined below are the minimum tasks generally required by the EPA for a RCRA investigation of a SWMU or AOC:

- Task I Description of Current Conditions
- Task II Work Plan
- Task III Facility Investigation
- Task IV Investigative Analysis
- Task V Report.

The Task I requirements for the Drainage Spillway have been addressed in the *Description of Current Conditions* (Tinker, 1992), which outlines the geology, hydrogeology, and current conditions of the site. Task II requirements have been addressed in the *Final RFI Work Plan* (CDM Federal Programs Corporation [CDM], 1992) and the Final RFI Work Plan - Amendments (IT Corporation [IT], 1993a). The *Final RFI Work Plan* and the Final RFI Work Plan - Amendments include a Data Management Plan, Project Management Plan, Data Collection Quality Assurance Plan, Health and Safety Plan, and amendments as necessary to perform a Phase I RFI. Tasks III and IV requirements, which characterize the site, determine the





presence of contamination, and identify actual and potential receptors have been addressed in this report. This report also satisfies the requirements of Task V.

1.1 Purpose

This report has been prepared in response to the U.S. Department of the Air Force, Tinker AFB, Oklahoma request for a Phase I RFI and report for the Drainage Spillway.

The purpose of this report is to document and present the findings of the RFI conducted at the Drainage Spillway. The primary objective of the RFI was to determine if contaminant releases to the Drainage Spillway have occurred from Building 1030 operations and to determine if a more comprehensive Phase II RFI or a CMS is required. This RFI Report presents the following information:

- Site characterization (Environmental Setting)
- Source term definition (Source Characterization)
- Degree of contamination (Contamination Characterization)
- Identification of actual or potential receptors
- Analytical results and analysis (Data Analysis)
- Identification of action levels for the protection of human health and the environment (Protection Standards)
- Conclusions and recommendations for future work.

This document will also describe the procedures and methods of field sampling and cite any previous investigations conducted at the site.

1.2 Scope of Investigation

The soils below an outfall near Building 1030 were investigated. Two soil samples were taken at depths from 0 to 18 inches along the Drainage Spillway to determine the presence of subsurface soil contamination. One source characterization sample was collected from a sump located north of Building 1030 to determine if floor drains were connected to the sump, and or, Drainage Spillway. Flow tests were also conducted on the floor drains to determine drainage connections.

2.0 Background

2.1 Tinker AFB Facility Description and History

Tinker AFB is located in central Oklahoma, in the southeast portion of the Oklahoma City metropolitan area, in Oklahoma County (Figure 1-1) with its approximate geographic center located at 35° 25' latitude and 97° 24' longitude (U.S. Geological Survey [USGS], 1978). The Base is bounded by Sooner Road to the west, Douglas Boulevard to the east, Interstate 40 to the north, and Southeast 74th Street to the south. An additional area east of the main Base is used by the Engineering Installation Division (EID) and is known as Area D. The Base encompasses approximately 5,000 acres.

Tinker AFB was originally known as the Midwest Air Depot and began operations in July 1941. The site was activated March 1942 and during World War II the depot was responsible for reconditioning, modifying, and modernizing aircraft, vehicles, and equipment. Tinker AFB now serves as a worldwide repair depot for a variety of aircraft, weapons, and engines. These activities require the use of hazardous materials and result in the generation of hazardous wastes. These wastes have included spent organic solvents, waste oils, waste paint strippers and sludges, electroplating wastewaters and sludges, alkaline cleaners, acids, FreonTM, jet fuels, and radium paints. Wastes that are currently generated are managed at two permitted hazardous waste storage facilities. Prior to enactment of RCRA, however, industrial wastes were discharged into unlined landfills and waste pits, streams, sewers, and ponds. Releases from these areas as well as from underground tanks have occurred. As a result, there are numerous sites of soil, groundwater, and surface water contamination on Base.

2.2 Site Description and History

The Drainage Spillway is a drainage area located northwest of Building 1030 (PRC Environmental Management, Inc., [PRC], 1989). Building 1030 is located east of SWMU-4, Landfill 2, in the southwestern part of the Base. The Drainage Spillway receives runoff from Building 1030 roof drains and adjacent ramp areas, and was believed to receive drainage from the wash rack drains. Dye testing performed on March 3, 1994 confirmed that the wash waters of Building 1030 flow to the sanitary sewer.

2.3 Regulatory History and Status

In 1980, Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to address the cleanup of hazardous waste disposal sites across the country. CERCLA gave the president authority to require responsible parties to remediate the sites or to undertake response actions through use of a fund (the Superfund). The president, through Executive Order 12580, delegated the EPA with the responsibility to investigate and remediate private party hazardous waste disposal sites that created a threat to human health and the environment. The president delegated responsibility for investigation and cleanup of federal facility disposal sites to the various federal agency heads. The Defense Environmental Restoration Program (DERP) was formally established by Congress in Title 10 U.S. Code (USC) 2701-2707 and 2810. DERP provides centralized management for the cleanup of U.S. Department of Defense (DOD) hazardous waste sites consistent with the provisions of CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] 300), and Executive Order 12580. To support the goals of the DERP, the IRP was developed to identify, investigate, and clean up contamination at installations.

Under the Air Force IRP, Tinker AFB began a Phase I study similar to a preliminary assessment/site investigation (PA/SI) in 1981. This study helped locate 14 sites that needed further investigation. A Phase II study was performed in 1983.

In 1986, Congress amended CERCLA through the SARA, which waived sovereign immunity for federal facilities. SARA gave EPA authority to oversee the cleanup of federal facilities and to have the final authority for selecting the remedial action at federal facilities placed on the National Priorities List (NPL) if the EPA and the relevant federal agency cannot concur in the selection. Congress also codified the DERP (SARA Section 211), setting up a fund for the DOD to remediate its sites because the Superfund is not available for the cleanup of federal facilities. DERP specifies the type of cleanup responses that the fund can be used to address.

In response to SARA, the DOD realigned its IRP to follow the investigation and cleanup stages of the EPA:

- PA/SI
- Remedial investigation/feasibility study (RI/FS)

- · Record of Decision (ROD) for selection of a remedial action
- Remedial design/remedial action.

In 1984, Congress amended the RCRA with the Hazardous and Solid Waste Amendments (HSWA) which allow the EPA to require, as a permit condition, a facility to undertake corrective action for any release of hazardous waste or constituents from any SWMU at a treatment, storage, and disposal (TSD) facility. On January 12, 1989 Tinker AFB submitted its Part B permit application for renewal of its operating RCRA hazardous waste storage facility permit.

EPA, in the Hazardous Waste Management Permit for Tinker AFB dated July 1, 1991, identified 43 SWMUs and two AOCs on Tinker AFB that need to be addressed. This permit requires Tinker AFB to investigate all SWMUs and AOCs and to perform corrective action at those identified as posing a threat to human health or the environment. Since receiving the Hazardous Waste Management Permit, many IRP sites have come under the jurisdiction of the RCRA permits branch of the EPA.

2.4 Summary of Previous Investigations

The Drainage Spillway was recently added to the IRP, and no work has yet been conducted at the site. Surface water runoff from the Drainage Spillway is presently sampled weekly for the National Pollutant Discharge Elimination System (NPDES) Permit, Storm Water Monitoring Program.

3.0 Environmental Setting

3.1 Topography and Drainage

3.1.1 Topography

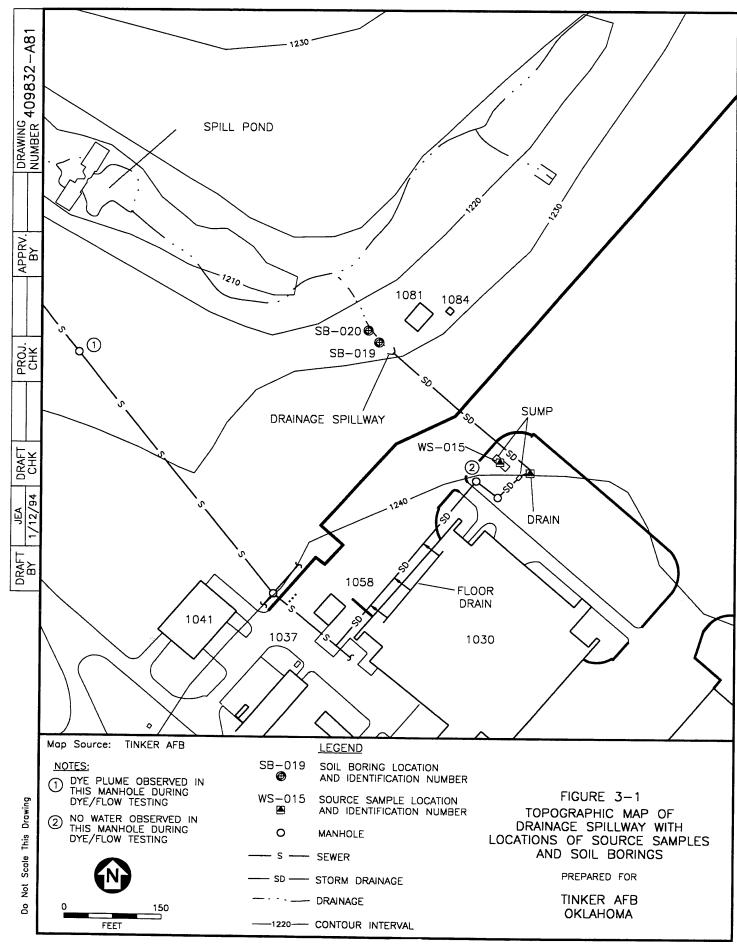
Regional/Tinker AFB. The topography of Oklahoma City and surrounding area varies from generally level to gently rolling in appearance. Local relief is primarily the result of dissection by erosional activity or stream channel development. At Oklahoma City, surface elevations are typically in the range of 1,070 to 1,400 feet mean sea level (msl). At Tinker AFB ground surface elevations vary from 1,190 feet msl near the northwest corner where Crutcho Creek intersects the Base boundary to approximately 1,320 feet msl at Area D (EID), located on 59th Street, east of the main installation.

Site. The Drainage Spillway ranges in elevation from 1,240 feet msl at Building 1030 to approximately 1,210 feet msl within this AOC (Figure 3-1).

3.1.2 Drainage

Regional/Tinker AFB. Drainage of Tinker AFB land areas is accomplished by overland flow of runoff to diversion structures and thence to area surface streams, which flow intermittently. The northeast portion of the Base is drained primarily by tributaries of Soldier Creek. The north and west sections of the Base, including the main instrument runway, drain to Crutcho Creek, a tributary of the North Canadian River. Two small unnamed intermittent streams crossing installation boundaries south of the main instrument runway generally do not receive significant quantities of Base runoff due to site grading designed to preclude such drainage. These streams, when flowing, extend to Stanley Draper Lake, approximately one-half mile south of the Base.

Site. Drainage in the area of Building 1030 is in a northerly direction towards the Drainage Spillway.



3.2 Geology

3.2.1 Regional/Tinker AFB Geology

Tinker AFB is located within the Central Redbed Plain Section of the Central Lowland physiographic province, which is tectonically stable. No major fault or fracture zones have been mapped near Tinker AFB. The major lithologic units in the area of the Base are relatively flat-lying and have a regional westward dip of about 0.0076 foot per foot (ft/ft) (Bingham and Moore, 1975).

Geologic formations that underlie Tinker AFB include, from oldest to youngest, the Wellington Formation, Garber Sandstone, and the Hennessey Group; all are Permian in age. All geologic units immediately underlying Tinker AFB are sedimentary in origin. The Garber Sandstone and Wellington Formation are commonly referred to as the Garber-Wellington Formation due to strong lithologic similarities. These formations are characterized by fine-grained, calcareously-cemented sandstones interbedded with shale. The Hennessey Group consists of the Fairmont Shale and the Kingman Siltstone. It overlies the Garber-Wellington Formation along the eastern portion of Cleveland and Oklahoma counties. Quaternary alluvium is found in many undisturbed streambeds and channels located within the area.

Stratigraphy. Tinker AFB lies atop a sedimentary rock column composed of strata that ranges in age from Cambrian to Permian above a Precambrian igneous basement. Quaternary alluvium and terrace deposits can be found overlying bedrock in and near present-day stream valleys. At Tinker AFB, Quaternary deposits consist of unconsolidated weathered bedrock, fill material, windblown sand, and interfingering lenses of sand, silt, clay, and gravel of fluvial origin. The terrace deposits are exposed where stream valleys have downcut through older strata and have left them topographically above present-day deposits. Alluvial sediments range in thickness from less than a foot to nearly 20 feet.

Subsurface (bedrock) geologic units which outcrop at Tinker AFB and that are important to understanding groundwater and contaminant concerns at the Base consist of, in descending order, the Hennessey Group, the Garber Sandstone, and the Wellington Formation (Table 3-1). These bedrock units were deposited during the Permian age (230 to 280 million years ago) and are typical of redbed deposits formed during that period. The units are composed of a conformable sequence of sandstones, siltstones, and shales. Individual beds are lenticular and vary in thickness over short horizontal distances. Because lithologies are similar and because of a lack of fossils or key beds, the Garber Sandstone and the Wellington Formation

Table 3-1

Major Geologic Units in the Vicinity of Tinker AFB (Modified from Wood and Burton, 1968) Tinker AFB

(Page 1 of 2)

Water-Bearing Properties	Moderately permeable. Yields small to moderate quantities of water in valleys of larger streams. Water is very hard, but suitable for most uses, unless contaminated by industrial wastes or oil field brines.	Moderately permeable. Locally above the water table and not saturated. Where deposits have sufficient saturated thickness, they are capable of yielding moderate quantities of water to wells. Water is moderately hard to very hard, but less mineralized than water in other aquifers. Suitable for most uses unless contaminated by oil field brines.
Description and Distribution	Unconsolidated and interfingering lenses of sand, silt, clay, and gravel in the flood plains and channels of stream	Unconsolidated and interfingering lenses of sand, silt, gravel, and clay that occur at one or more levels above the flood plains of the principal streams.
Thickness (feet)	0-70	0-100
Stratigraphic Unit	Alluvium	Terrace deposits
Series	д ч ш − ∞ ⊢ O O ш Z ш	ANO REOUNTH
System	О⊃∢⊢ша	: Ζ ∢ α ≻

Table 3-1

(Page 2 of 2)

Water-Bearing Properties	Poorly permeable. Yields meager quantities or very hard, moderately to highly mineralized water to shallow domestic and stock wells. In places water contains large amounts of sulfate. Poorly to moderately permeable. Important source of groundwater in Cleveland and Oklahoma counties. Yields small to moderate quantities of water to deep wells; heavily pumped for industrial and municipal uses in the Norman and Midwest City areas. Water from shallow wells hard to very hard; water from deep wells moderately hard to soft. Lower part contains water too salty for domestic and most industrial uses.
Description and Distribution	Deep-red clay shale containing thin beds of red sandstone and white or greenish bands of sandy or limey shale. Forms relatively flat to gently rolling grass-covered prairie. Deep-red clay to reddish-orange, massive and cross-bedded and interfingered with red shale and siltstone Deep-red to reddish-orange massive and cross-bedded fine-grained sandstone interbedded with red, purple, maroon, and gray shale. Base of formation not exposed in the area.
Thickness (feet)	500 ₊
Stratigraphic Unit	Hennessey Group (includes Kingman Siltstone and Fairmont Shale) Garber Sandstone Wellington Formation
Series	
System Series	σ m α ≥ − ∢ z

are difficult to distinguish and are often informally lumped together as the Garber-Wellington Formation. Together, they are about 900 feet thick at Tinker AFB. The interconnected, lenticular nature of sandstones within the sequence forms complex pathways for groundwater movement.

The surficial geology of the north section of the Base is dominated by the Garber Sandstone, which outcrops across a broad area of Oklahoma County. Generally, the Garber outcrop is covered by a thin veneer of soil and/or alluvium up to 20 feet thick. To the south the Garber Sandstone is overlain by outcropping strata of the Hennessey Group including the Kingman Siltstone and the Fairmont Shale (Bingham and Moore, 1975). Drilling information obtained as a result of geotechnical investigations and monitoring well installation confirms the presence of these units.

Depositional Environment. The Permian-age strata presently exposed at the surface in central Oklahoma were deposited along a low-lying north-south oriented coastline. Land features included meandering to braided sediment-loaded streams that flowed generally westward from highlands to the east (ancestral Ozarks). Sand dunes were common as were cut-off stream segments that rapidly evaporated. The climate was arid and vegetation sparse. Offshore the sea was shallow and deepened very gradually to the west. The shoreline position varied over a wide range. Isolated evaporitic basins frequently formed as the shoreline shifted.

Across Oklahoma, this depositional environment resulted in an interfingering collage of fluviatile and windblown sands, clays, shallow marine shales, and evaporite deposits. The overloaded streams and evaporitic basins acted as sumps for heavy metals such as barium, chromium, lead, and iron. Oxidation of iron in the arid climate resulted in the reddish color of many of the sediments. Erosion and chemical breakdown of granitic rocks from the highlands result in extensive clay deposits. Evaporite minerals such as anhydrite (CaSO₄), barite (BaSO₄), and gypsum (CaSO₄•2H₂O) are common.

Around Tinker AFB, the Hennessey Group represents deposition in a tidal flat environment cut by shallow, narrow channels. The Hennessey Group comprises predominantly red shales that contain thin beds of sandstone (less than 10 feet thick) and siltstone. In outcrops, "mudball" conglomerates, burrow surfaces, and desiccation cracks are recognized. These units outcrop over roughly the southern half of the Base, thickening to approximately 70 feet

in the southwest from their erosional edge (zero thickness) across the central part of Tinker AFB.

In contrast, the Garber Sandstone and Wellington Formation around Tinker AFB consist of an irregularly interbedded system of lenticular sandstones, siltstones, and shales deposited either in meandering streams in the upper reaches of a delta or in a braided stream environment. Outcrop units north of Tinker AFB exhibit many small to medium channels with cut-and-fill geometries consistent with a stream setting. Sandstones are typically cross-bedded. Individual beds range in thickness from a few inches to about 50 feet and appear massive but thicker units are often formed from a series of "stacked" thinner beds. Geophysical and lithologic well logs indicate that from 65 to 75 percent of the Garber Sandstone and the Wellington Formation are composed of sandstone at Tinker AFB. The percentage of sandstone in the section decreases to the north, south, and west of the Base. These sandstones are typically fine to very fine grained, friable, and poorly cemented. However, where sandstone is cemented by red muds or by secondary carbonate or iron cements, local thin "hard" intervals exist along disconformities at the base of sandstone beds. Shales are described as ranging from clayey to sandy, are generally discontinuous, and range in thickness from a few inches to about 40 feet.

Stratigraphic Correlation. Correlation of geologic units is difficult due to the discontinuous nature of the sandstone and shale beds. However, cross sections demonstrate that two stratigraphic intervals can be correlated over most of the Base in the conceptual model. The location of these cross sections is shown in Figure 3-2. These intervals are represented on geologic cross-sections A-A' and B-B' in Figures 3-3 and 3-4, respectively. Section A-A' is roughly a dip section and B-B' is approximately a strike section. The first correlatable interval is marked by the base of the Hennessey Group and the first sandstone at the top of the Garber Sandstone. This interval is mappable over the southern half of Tinker AFB. The second interval consists of a shale zone within the Garber Sandstone, which in places is composed of a single shale layer and in other places of multiple shale layers. This interval is more continuous than other shale intervals and in cross sections appears mappable over a large part of the Base. It is extrapolated under the central portion of Tinker AFB where little well control exists.

Structure. Tinker AFB lies within a tectonically stable area; no major near-surface faults or fracture zones have been mapped near the Base. Most of the consolidated rock units of the Oklahoma City area dip westward at a low angle. A regional dip of 0.0057 to 0.0076 ft/ft in

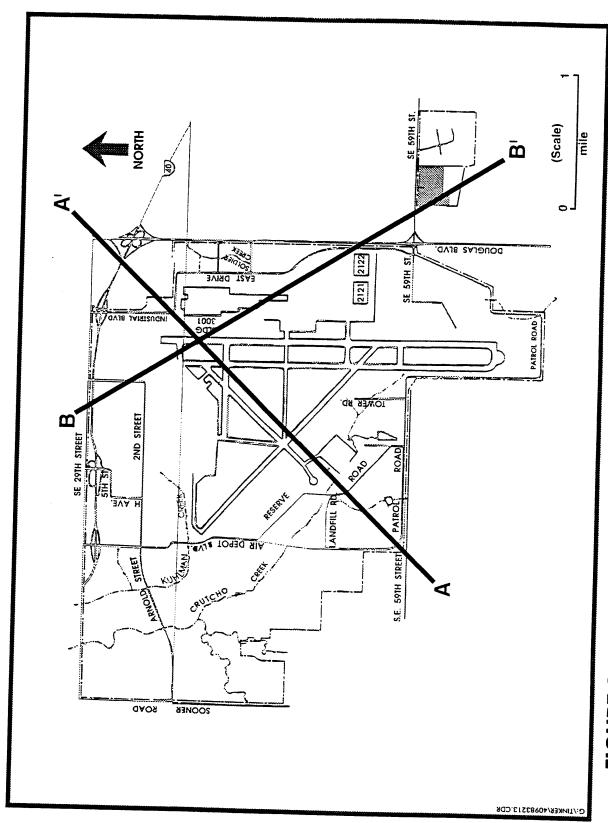


FIGURE 3-2 TINKER AFB GEOLOGIC CROSS SECTION LOCATION MAP

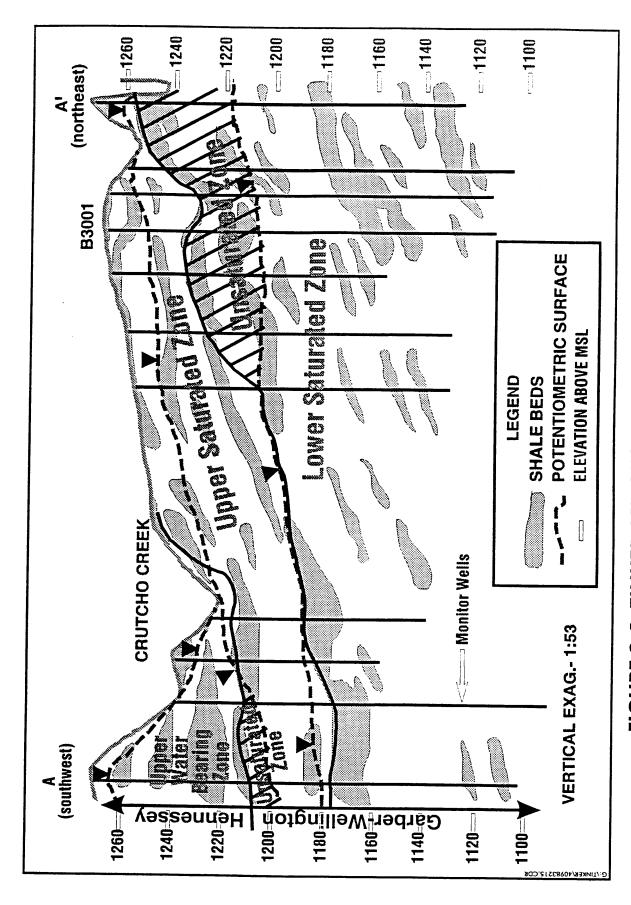


FIGURE 3-3 TINKER AFB GEOLOGIC CROSS SECTION A-A'

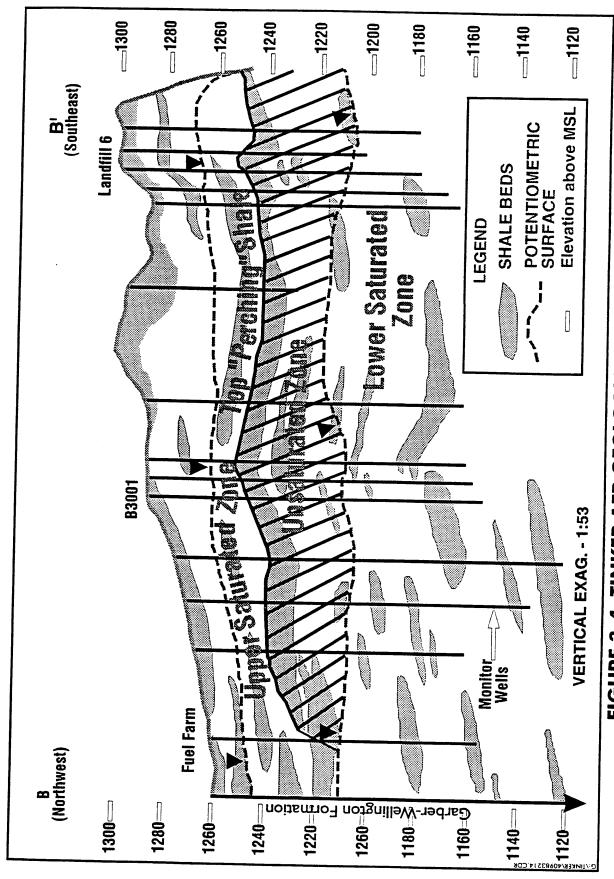


FIGURE 3-4 TINKER AFB GEOLOGIC CROSS SECTION B-B'

a generally westward direction is supported by stratigraphic correlation on geologic cross sections at Tinker AFB. Bedrock units strike slightly west of north.

Although Tinker AFB lies in a tectonically stable area, regional dips are interrupted by buried structural features located west of the Base. A published east to west generalized geologic cross section that includes Tinker AFB supports the existence of a northwest trending structural trough or syncline located near the western margin of the Base. The syncline is mapped adjacent to and just east of a faulted anticlinal structure located beneath the Oklahoma City Oil Field. The fault does not appear to offset Permian-age strata. There are indications that the syncline may act as a "sink" for some regional groundwater (southwest flow) at Tinker AFB before it continues to more distant discharge points.

3.2.2 Site Geology

The Drainage Spillway site is situated in the outcrop area of the Hennessey Group. The Phase I RFI conducted at the Drainage Spillway site focused on evaluating impacts, if any, to surface sediments and, did not include any investigation into subsurface geology conditions at the site. As such, the soils investigation at the site was limited to the sampling of two borings hand augered to 18-inch depth in the Drainage Spillway. These drainage ditch sediments varied from sandy clay with gravel chunks to clay with fine sand.

3.3 Hydrology

3.3.1 Regional/Tinker AFB Hydrology

The most important source of potable groundwater in the Oklahoma City metropolitan area is the Central Oklahoma aquifer system. This aquifer extends under much of central Oklahoma and includes water in the Garber Sandstone and Wellington Formation, the overlying alluvium and terrace deposits, and the underlying Chase, Council Grove, and Admire Groups. The Garber Sandstone and the Wellington Formation portion of the Central Oklahoma aquifer system is commonly referred to as the "Garber-Wellington aquifer" and is considered to be a single aquifer because these units were deposited under similar conditions and because many of the best producing wells are completed in this zone. On a regional scale, the aquifer is confined above by the less permeable Hennessey Group and below by the Late Pennsylvanian Vanoss Group.

Tinker AFB lies within the limits of the Garber-Wellington Groundwater Basin. Presently, Tinker AFB derives most of its water supply from this aquifer and supplements the supply by

purchasing from the Oklahoma City Water Department. The nearby communities of Midwest City and Del City derive water supplies from both surface sources and wells tapping the aquifer. Industrial operations, individual homes, farm irrigation, and small communities not served by a municipal distribution system also depend on the Garber-Wellington aquifer. Communities presently depending upon surface supplies such as Oklahoma City also maintain a well system drilled into the Garber-Wellington aquifer as a standby source of water in the event of drought.

Recharge of the Garber-Wellington aquifer is accomplished principally by percolation of surface waters crossing the area of outcrop and by rainfall infiltration in this same area. Because most of Tinker AFB is located in an aquifer outcrop area, the Base is considered to be situated in a recharge zone.

According to Wood and Burton (1968) and Wickersham (1979), the quality of groundwater derived from the Garber-Wellington aquifer is generally good, although wide variations in the concentrations of some constituents are known to occur. Wells drilled to excessive depths may encounter a saline zone, generally greater than 900 feet below ground surface. Wells drilled to such depths or those accidentally encountering the saline zone are either grouted over the lowest screens or may be abandoned.

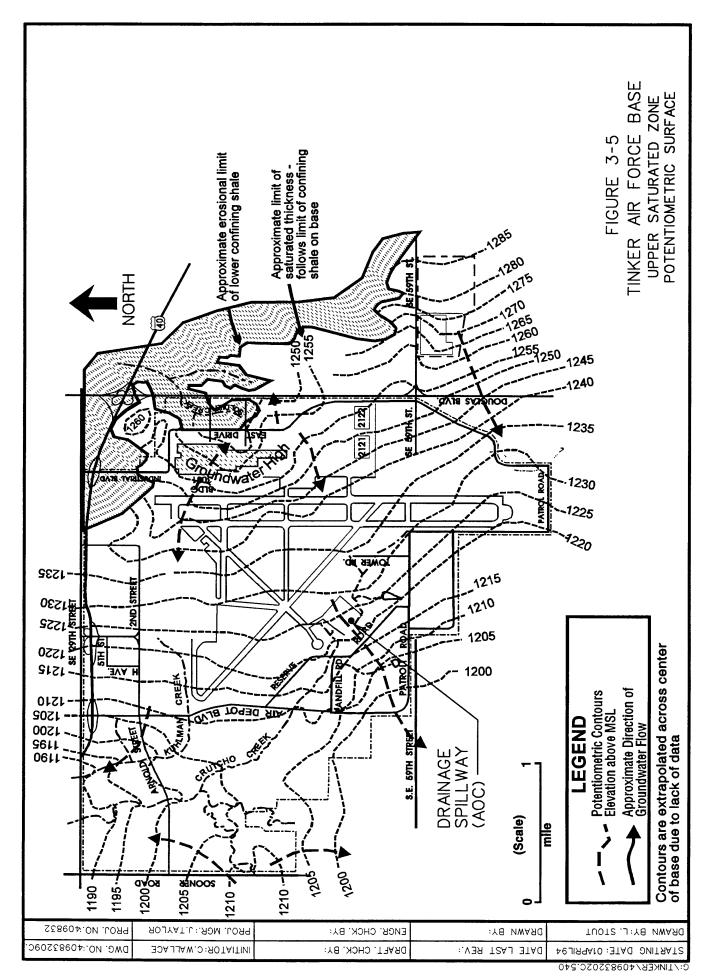
Tinker AFB presently obtains its water supplies from a distribution system that is composed of 29 water wells constructed along the east and west Base boundaries and by purchase from the Oklahoma City Water Department. All Base wells are finished into the Garber-Wellington aquifer. Base wells range from 700 to 900 feet in finished depth, with yields ranging from 205 to 250 gallons per minute. The wells incorporate multiple screens, deriving water supplies from sand zones with a combined thickness from 103 to 184 feet (Wickersham, 1979).

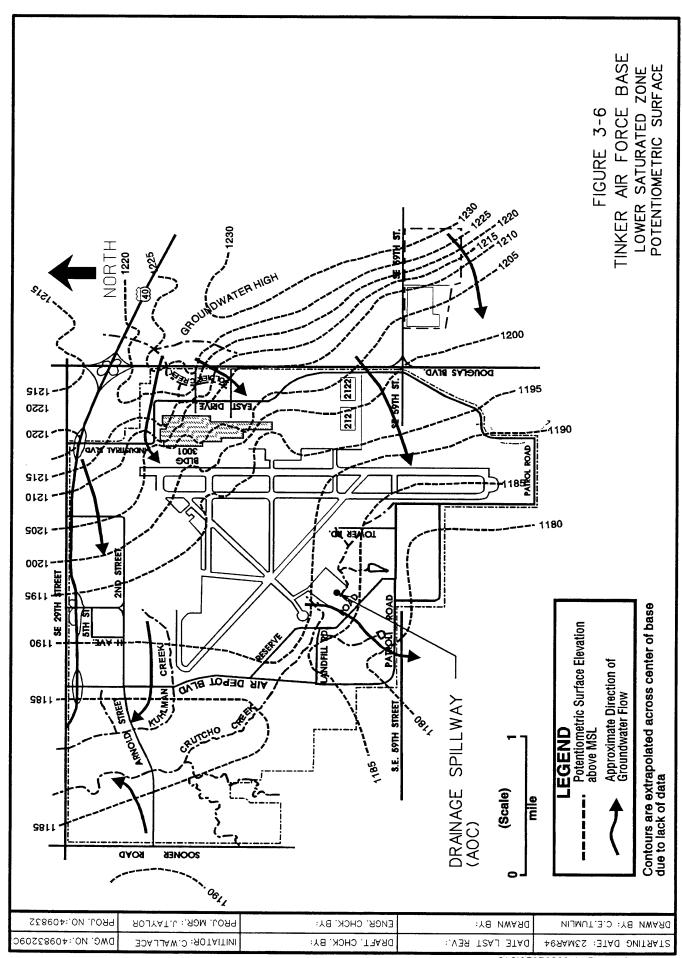
Conceptual Hydrologic Model. The hydrologic conceptual model of Tinker AFB involves a comprehensive review of available data, including those from direct measurement sources (borings, water level measurements, pump/slug tests, stream studies) as well as indirect sources (aerial photographs, topographic maps, published reports). The hydrologic system at Tinker AFB is complex, but the model provides both an approximation of depth to water and an estimated direction of groundwater movement and is therefore useful as a basis for designing field investigations. As information is derived from investigations the model is continually updated and refined.

Groundwater. As a result of ongoing environmental investigations and the approximately 450 groundwater monitoring wells installed on the Base during various investigations, a better understanding of the specific hydrological framework has emerged. The current conceptual model developed by Tinker AFB (Tinker, 1993), based on the increased understanding of the hydrological framework, has been revised from a previous model adopted by the U.S. Army Corps of Engineers (USACE). Previous studies reported that groundwater was divided into four water bearing zones: the perched aquifer, the top of regional aquifer, the regional aquifer, and the producing zone. In the current model, two principal water table aquifer zones and a third less extensive zone have been identified. The third is limited to the southwest quadrant. The third aquifer zone consisted of saturated siltstone and thin sandstone beds in the Hennessey Shale and equates to the upper water bearing zone (UWBZ) described by the USACE at Landfills 1 through 4 (SWMUs-3 through -6). In addition, numerous shallow, thin saturated beds of siltstone and sandstone exist throughout the Base. These beds are of limited areal extent and are often perched.

In the current conceptual hydrologic model by Tinker AFB, an upper saturated zone (USZ) and a lower saturated zone (LSZ) are recognized in the interval from ground surface to approximately 200 feet. Below this depth is found the producing zone from which the Base draws much of its water supply. Figure 3-5 shows the potentiometric surface for the USZ and Figure 3-6 shows the potentiometric surface for the LSZ. The USZ exists under water table (unconfined) conditions, but may be partially confined locally. Conditions in the LSZ are difficult to determine due to screen placement and overlie long sand packs below the screen interval.

The USZ is found at a depth of 5 to 70 feet below ground surface and has a saturated thickness ranging from less than 1 foot at its eastern boundary to more than 20 feet in places west of Building 3001. The USZ is erosionally truncated by Soldier Creek along the northeastern margin of Tinker AFB. This aquifer zone is considered to be a perched aquifer over the eastern one-third of Tinker AFB, where it is separated from the LSZ by an underlying confining shale layer and a vadose zone. The confining interval extends across the entire Base, but the vadose zone exists over the eastern one-third of this area. The available hydrologic data indicate that the vadose zone does not exist west of a north-south line located approximately 500 to 1,000 feet west of the main runway; consequently, the USZ is not perched west of this line. However, based on potentiometric head data from wells screened above and below the confining shale layer, the USZ remains a discrete aquifer zone distinct from the LSZ even over the western part of the Base. In areas where several shales interfin-





ger to form the lower confining interval rather than a single shale bed, "gaps" may occur. In general, these gaps are not holes in the shale but are places where multiple shales exist that are separated by slightly more permeable strata. Hydrologic data from monitoring wells indicate that these zones allow increased downward flow of groundwater above what normally leaks through the confining layer.

The LSZ is hydraulically interconnected and can be considered one aquifer zone down to approximately 200 feet. This area includes what was referred to by the USACE as the top of regional and regional zones. Hydrologic data from wells screened at different depths at the same location within this zone, however, provide evidence that locally a significant vertical (downward) component of groundwater flow exists in conjunction with lateral flow. The magnitude of the vertical component is highly variable over the Base. Preliminary evidence suggests that the LSZ is hydraulically discrete from the producing zone. Due to variations in topography the top of the lower zone is found at depths ranging from 50 to 100 feet below ground surface under the eastern parts of the Base and as shallow as 30 feet to the west. Differences in potentiometric head values found at successive depths are due to a vertical (downward) component of groundwater flow in addition to lateral flow and the presence or absence of shale layers that locally confine the aquifer system. The LSZ extends east of the Base (east of Soldier Creek) beyond the limits of the USZ where it becomes the first groundwater zone encountered in off-Base wells. Because of the regional dip of bedding, groundwater gradient, and topography, the LSZ just east of the Base is generally encountered at depths of less than 20 feet.

Across the central portion of Tinker AFB, the unsaturated zone separating the USZ and LSZ disappears where the intervening shale layer dips below the surface of the LSZ. The disappearance of the unsaturated zone is supported by data from recently completed wells just west of the north-south runway and near Base Operations and by data from wells in the southwest portion of the Base. Measured water levels in two of the new wells show that the LSZ is confined at these locations by the shale separating the USZ and LSZ. No unsaturated interval is present.

To the southwest, measured water levels from wells screened in the Garber Sandstone at Landfills 2 and 4, SWMUs-4 and -6, which correspond in the conceptual model to the USZ under the east part of the Base, show that the USZ remains unconfined or is partially confined. This zone is essentially the first water level encountered in the Garber Sandstone on the Base. Potentiometric data from wells in the southwest screened in deeper intervals,

that correspond roughly to the LSZ to the east indicate that the LSZ is confined in this area. Data from wells screened at various intervals to a depth of about 90 feet in this area also show that no vadose (unsaturated) zone separates the USZ from the rest of the aquifer. The upper and lower zones cannot be distinguished in this area except by correlating geologic units across Base.

Farther to the southwest of the landfills, near the edge of the Base, another unsaturated zone is found separating groundwater in the Hennessey Group from the Garber-Wellington aquifer. This unsaturated zone is not continuous with that encountered on the east side of the Base. The groundwater in the overlying Hennessey water bearing zone represents the third groundwater zone of more limited areal extent mentioned previously. This shallow unconfined aquifer system is located on a topographic high (groundwater divide) in the strata of the Hennessey Group. Radial flow of groundwater off the divide toward nearby tributaries of Crutcho Creek is suggested from limited water level measurements. Additional shallow perched saturated zones of limited areal extent are thought to exist in other sandstone and siltstone beds within the Hennessey water bearing zone. Along the western margin of Tinker AFB west of Crutcho Creek, the shallow groundwater in the Hennessey water bearing zone and probably groundwater in the most shallow saturated zones in the Garber-Wellington aquifer appears to flow toward stream tributaries, and therefore, does not follow regional flow patterns to the west/southwest.

The aquifer zones in the conceptual model are hydraulically connected, although sometimes only to a very local extent, either directly as in the west part of the Base or indirectly through leakage and/or recharge patterns related to local streams. Because Tinker AFB is located in a recharge zone for the Central Oklahoma aquifer both horizontal and vertical (downward) components of groundwater flow exist. Measured potentiometric levels from well clusters with screens and filter packs placed at varying depths within the LSZ show that hydraulic heads decrease with depth and that the magnitude of the vertical component of flow varies with location. This finding is particularly important to recognize where data from these wells are being used to generate potentiometric contour maps.

Although the variability in the geology and the recharge system at Tinker AFB makes it difficult to predict local flow paths, Central Oklahoma aquifer water table data taken from the 1992 USGS Hydrologic Atlas show that regional groundwater flow under Tinker AFB varies from west/northwest to southwest depending on location. This finding is supported by contoured potentiometric data from Base monitoring wells, which show groundwater

movement in the upper aquifer zones to generally follow regional dip. Measured normal to potentiometric contours, groundwater flow gradients range from 0.0019 to 0.0057 ft/ft. However, because flow in the near surface portions of the aquifer at Tinker AFB is strongly influenced by topography, local stream-based levels, complex subsurface geology and location in a recharge area, both direction and magnitude of groundwater movement is highly variable. The interaction of these factors not only influences regional flow, but gives rise to complicated local, often transient, flow patterns at individual sites.

Several examples demonstrate this variability. Historical water level data around Crutcho Creek indicate that groundwater flow in that area is predominantly to the southwest. However, during high flow conditions bank recharge occurs and shallow local flow patterns near the creek may be reversed. This pattern is probably in effect at other streams as well. In the northeast quadrant of the Base, several factors contribute to groundwater "mounding" in the USZ and to formation of a groundwater high in the LSZ. This mounding leads to radial or semiradial groundwater flow at shallow depths. Finally, in the northeast part of the Base where sufficient data exist, comparison of potentiometric contours from successively deeper levels in the LSZ suggests that groundwater flow directions change with depth, gradually turning from west/southwest to northwest. This change in regional flow is attributed either to effects of pumping from deep water supply wells in the area and/or to the presence of the Deep Fork River located to the north. This river, along with the Canadian River south of Tinker AFB, has been demonstrated by the USGS to act as a major discharge point for regional groundwater in Central Oklahoma.

Surface Water. The interaction of surface water with groundwater is an important factor in predicting local groundwater flow patterns at Tinker AFB. Although no technical stream study data are presently available to determine what degree of interaction occurs between streams and groundwater, some qualitative observations provide clues to the importance of this system. The direction of stream flow on Tinker AFB appears to be controlled largely by a topographic divide that extends from southwest to northeast across the south part of the Base. Streams that originate on the north side of the divide flow to the north. These streams include Soldier Creek, Crutcho Creek, and Kuhlman Creek. Elm Creek, which has its origin on the southeast side flows to the south. Streams that flow northward become perennial before leaving the Base and with no other constant source of water available are considered to be recharged by the aquifer (gaining streams). Some data indicate, however, that these streams become dry north of the Base during periods of lower precipitation and lose water to the aquifer (losing streams). Information from wells and piezometers near the ponded section

of Soldier Creek at the industrial wastewater treatment plant also suggests that the pond contributes to the groundwater (a losing stream) in the LSZ at that location. Portions of Soldier Creek tributaries (near their headwaters, off-Base) flow only intermittently and probably recharge the aquifer through infiltration during periods of higher precipitation. Finally, where groundwater and stream elevations are the same, the observed direction of groundwater flow may be affected by transient factors such as bank storage from periods of increased precipitation.

Man-Made Structures. In the conceptual model of Tinker AFB it is recognized that man-made features such as buried utilities (storm drains, waste lines) may further complicate the shallow groundwater picture. An additional problem encountered in generating the model involves improper monitoring well construction practices that not only may contribute preferred pathways for groundwater (and contaminant) movement where wells have multiple screens or overlie long filter packs, but also often provide nonrepresentative, biased groundwater, and sample data.

The complex groundwater system at Tinker AFB makes correct placement and construction of monitoring and extraction wells critical. A good understanding of the conceptual hydrologic framework is essential to obtain representative data and to minimize errors. An integrated hydrologic conceptual model provides an overview of the groundwater system and leads in turn to more effective site project management.

3.3.2 Site Hydrology

A hydrologic investigation was not conducted at the Drainage Spillway in this Phase I RFI. It is known, however, that the Drainage Spillway feeds into Crutcho Creek. At Tinker AFB, Crutcho Creek is believed to be a gaining stream recharged by the uppermost aquifer. Therefore, it is unlikely that any constituents carried by the creek would migrate into the aquifer.

3.4 Soils

The surface soils of Tinker AFB have been studied by the U.S. Department of Agriculture (USDA), Soil Conservation Service (1969) and by several soil boring projects conducted for geotechnical (foundation construction) investigations. Surface soils of the installation area are predominantly of two basic types: residual and alluvial. The three major soil associations mapped within installation limits are Darrell-Stephenville, Renfrow-Vernon-Bethany, and Dale-Canadian-Port. The residual soils associations (Table 3-2), Darrell-Stephenville and

Table 3-2

Tinker AFB Soil Associations (Source: USDA, 1969)

Association	Description	Thickness (in.)	Unified Classification ^a	Permeability (in./hr)
Darrell-Stephenville: loamy soils of wooded uplands	Sandy loam Sandy clay loam Soft sandstone (Garber Sandstone)	12-54	SM,ML,SC	2.0-6.30
Renfrow-Vernon-Bethany: loamy and clayey soils on prairie uplands	Silt loam - clay Clay loam Shale (Fairmont Shale)	12-60	ML,CL,MH,CH	<0.60-0.20
Dale-Canadian-Port: loamy soil on low benches near large streams	Fine sandy loam Silty clay loam Loam Clay loam	12-60	SM,ML,CL	0.05-6.30

^aUnified classifications defined in U.S. Bureau of Reclamation, 5005-86.

Renfrow-Vernon-Bethany are the products of the weathering of underlying bedrock. The alluvial materials of the Dale-Canadian-Port association are stream-deposited silts and sands, whose occurrence is typically restricted to floodplains of area streams.

4.0 Description of Investigative Methods

The Phase I investigation of the Drainage Spillway focused on determining whether a release from Building 1030 to the Drainage Spillway has occurred. All activities conducted during the field investigation program were performed in accordance with the Work Plan, the Data Management Plan, the Data Collection Quality Assurance Plan, the Health and Safety Plan, and their Amendments. Field investigation activities described in the following sections included investigation of the drainage system from Building 1030 to determine if the Drainage Spillway receives runoff or discharge from the building. In addition, a source/wastewater sample was collected from a sump located east of Building 1030, which may drain into the Drainage Spillway. Finally, two soil samples were collected from the Drainage Spillway (Figure 4-1). These investigative activities are summarized in Table 4-1.

4.1 Building 1030 Drainage System Configuration

Storm drains collect runoff from the Building 1030 area and empty through the Drainage Spillway to the spill pond. In order to determine if Building 1030 wash water flows into the storm drains, thus into the spill pond, flow/dye testing was performed at the floor drainage trench inside the building.

The first test introduced water colored with yellow dye into the drainage system of Building 1030. Observations were made at the outflow to the Drainage Spillway, the two sumps east of Building 1030, and several sewer and drainage lines located near the sumps for changes in the flow rate or presence of the yellow dye. No change in flow rate or yellow dye was observed in any of the above locations. Although this first dye test did not reveal the ultimate destination of the Building 1030 wash water, it did prove that the trench drain is not connected to the sump or the Drainage Spillway.

The second dye test was conducted on March 3, 1994. Water and bright green dye were introduced into the flow grates inside Building 1030 and 27 minutes later a dye plume was observed in a sanitary sewer manhole located approximately 600 feet northwest of the building. This test proved that the water from the Building 1030 wash area drains to the sanitary sewer system.

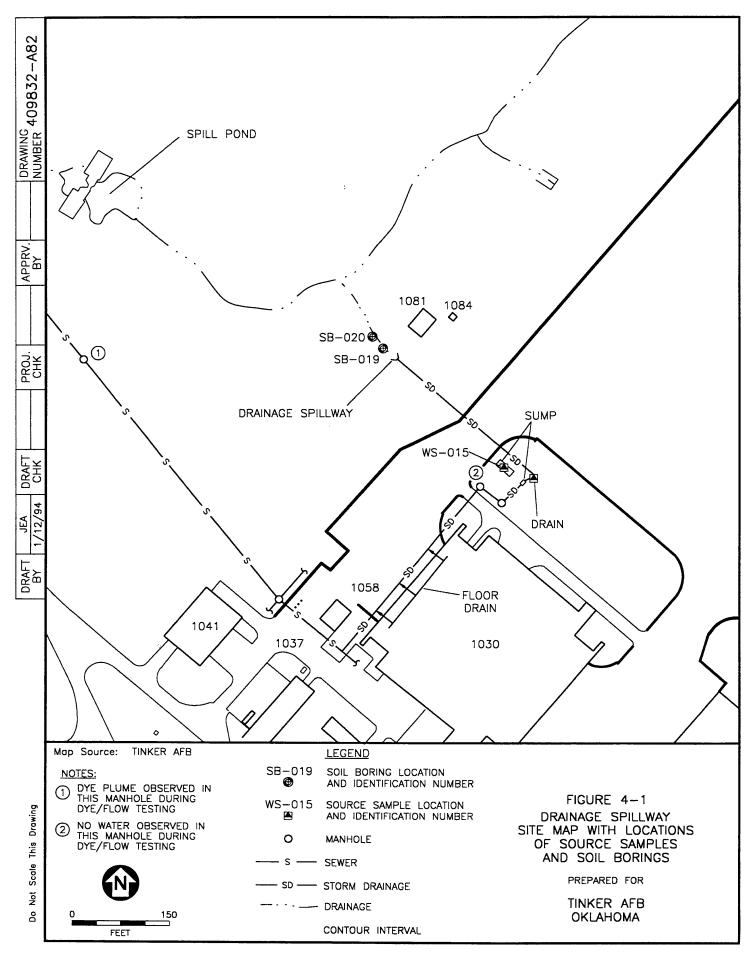


Table 4-1

AOC, Drainage Spillway, Tinker AFB Summary of RFI Field Activities

				Number	Number of Samples Collected for Chemical Analysis	collected for	Chemical A	nalysis	
Type of Activity	Number of Locations	Cumulative Footage of Borings/Wells	Average Footage per Boring/Well	Normal Samples	Duplicates	Rinsates	Field Blanks	Totals	Analyses Performed
Soil Borings	2	3	1.5	2	0	0	0	2	VOC, SVOCs, Metals
Source Character- ization Washwater Samples	-	n/a	n/a	-	-	0	-	က	VOCs, SVOCs, TPH, TOC, Metals

VOCs - Volatile organic compounds - EPA Method 8240 SVOCs - Semivolatile organic compounds - EPA Method 8270 Metals - EPA Method 6010-Al, Ag, As (EPA Method 7060), Ba, Be, Cd, Cr, hexavalent Cr (EPA Method 7196), Cu, Fe, Pb (EPA Method 7421), Ni, Zn, and Hg (EPA Method 7471)

TPH - Total petroleum hydrocarbon - EPA Method 418.1/9071

TOCs - Total organic carbon - EPA Method 415.1

4.2 Source/Wastewater Samples

One wastewater sample was collected from sample location WS-015, the sump located north of Building 1030. Originally, the work plan called for sampling of WS-014, another sump in the vicinity. That sample location was not sampled, however, because there was only approximately 2 inches of water in the sump and no water could be collected in the bailer. WS-015 was sampled using a disposable polyvinyl chloride (PVC) bailer and was analyzed for volatile organic compounds (VOC), semivolatile organic compounds (SVOC), total petroleum hydrocarbons (TPH), total organic carbon (TOC), and priority pollutant metals.

4.3 Soil Borings

Two soil borings, SB-19 and SB-20, were collected in the Drainage Spillway. The borings were drilled with a hand auger to 18 inches in depth. A soil sample was collected from the interval that had the highest indication of contamination based on photoionization detector/flame ionization detector (PID/FID) readings, odor, and visual observation. The samples were analyzed for VOCs, SVOCs, and priority pollutant metals. A description of the soil samples collected is contained in the Sample Collection Log (Appendix A).

5.0 Investigation Results

The following sections provide an evaluation of data quality and the results of the RFI performed at the Drainage Spillway. Section 5.1 reviews the procedures and methods used to ensure data quality and useability. Section 5.2 provides a discussion of the source characterization and the potential of Building 1030 as a contributing source for contamination of the Drainage Spillway. Section 5.3 provides details regarding the contaminant characterization via analysis of the results of the soils investigation. Groundwater was not encountered, nor investigated at the Drainage Spillway and thus will not be discussed.

5.1 Data Quality Evaluation

The quality of the analytical data used for the RFI must be sufficient to support the associated risk management decisions. Data quality is ensured through adherence to Data Quality Objectives (DQO) and the sampling and analysis program outlined in the Data Collection Quality Assurance Plan (DCQAP) (IT, 1993b). The DCQAP identifies sampling locations, sampling methods, DQOs, field and laboratory quality control testing, analytical methods and reporting, and data evaluation and verification. The quality control of field and laboratory activities; the assessment of precision, accuracy, and comparability of the data; and the verification of the data are the most significant activities designed to ensure compliance with the DQOs.

5.1.1 Field Quality Control

Field quality control testing involved the collection of control samples to aid in evaluating inaccuracies which may be induced by field activities. These control samples include:

- **Field Blanks.** A field blank is an amount of water, gas, or solid that is provided to demonstrate the absence of contamination during sampling. Field blanks were only collected for groundwater and waste samples.
- **Trip Blanks.** Volatile organics samples are susceptible to contamination by diffusion of organic contaminants into the sample container. Therefore, trip blanks were analyzed to monitor for sample contamination during shipment and storage. No trip blanks were obtained for soil samples, due to the dissimilarity in matrix between the blanks and the actual samples.
- **Rinsate Blanks.** A rinsate blank is a volume of rinse solution (e.g., deionized distilled laboratory water or organic solvent) used to rinse a sampling tool which contacts more than one sample. The rinse solution was collected after the

sampling tool was used and cleaned, to demonstrate that no residual contamination remained on the tool to carry over to the next sample.

• **Field Duplicates.** Duplicate analyses were performed to evaluate the precision of analysis. Both field and laboratory duplicates were taken and analyzed. Results of these analyses were used to determine the relative percent difference (RPD) between replicate samples.

5.1.2 Laboratory Quality Control

Laboratory quality control testing involved the use of control samples to aid in evaluating quality control errors which may be induced by laboratory activities. The control samples include:

- Method Blanks. A method blank is a volume of deionized and distilled laboratory water for liquid samples, or a purified solid matrix for soil/sediment samples, carried through the entire analytical procedure to identify contaminants introduced during the procedure.
- **Bottle Blanks.** At a frequency of 1 percent or greater, laboratory-prepared sample containers were tested to verify that the container cleaning procedure is performed acceptable. Parameters of concern for the particular container were tested (e.g., metals for plastic containers).
- Laboratory Blanks. Distilled water-filled volatile organic analysis (VOA) vials were stored in the laboratory using the same method of storage used for field samples. If the field and trip blanks contained high concentrations of contaminants, the laboratory blank was analyzed to identify the source of contamination.
- **Matrix Spikes.** To evaluate the effect of sample matrix on analytical methodology accuracy, a separate sample aliquot was spiked with the analyte of interest and analyzed with approximately ten samples or, if a smaller number of samples are associated with a test series, for each group of samples.
- **Surrogate Standards.** Surrogate standards are compounds added to gas chromatography/mass spectrometry (GC/MS) standards, blanks, and samples prior to extraction or purging to monitor the recovery efficiencies of the sample preparation and analytical procedures on a sample-by-sample basis.

5.1.3 Evaluation of Precision and Accuracy

As part of the analytical quality control testing program, quality control sample results were used to apply precision and accuracy criteria for each parameter that was analyzed. When the

analysis of a sample set was completed, the quality control data generated were evaluated based on the following criteria:

- Method Blank Evaluation. The method blank results were evaluated for high readings characteristic of background contamination. If high blank values were observed, laboratory glassware and reagents were checked for contamination and the analysis of future samples halted until the system could be evaluated.
- *Trip, Field, Laboratory, and Rinsate Blank Evaluation.* Trip, field, laboratory, and rinsate blank results were evaluated for high readings similar to the method blanks described above. If high blank readings were encountered, the procedure for sample collection, shipment, and laboratory analysis would be reviewed.
- **Duplicate Sample Evaluation.** Duplicate sample analysis was used to determine the precision of the analytical method for the sample matrix. The duplicate results will be used to calculate the precision as defined by the RPD.
- **Matrix Spike Evaluation.** The observed recovery of the spike versus the theoretical spike recovery was used to calculate accuracy as defined by the percent recovery (%R).
- Surrogate Standard Evaluation. The results of surrogate standard determinations were compared with the true values spiked into the sample matrix prior to purging or extraction and analysis, and the percent recoveries of the surrogate standards were determined.
- Comparability Between Data Sets. Comparability is a qualitative parameter
 expressing the confidence with which one data set can be compared with another.
 Comparability for sampling and analysis was achieved by specifying and using only
 well-recognized techniques and accepted standard EPA methods and procedures for
 sampling and analysis reporting of representative samples.

5.1.4 Data Verification

Data packages and parameters were evaluated against the following criteria to ensure data validity prior to use:

- Sampling documentation (e.g., sample collection log, Chain-of-Custody Form, and Request for Analysis Form) matches samples submitted to samples analyzed.
- Chain-of-Custody Forms are complete.
- Sample identification summary for each sample is present.
- Analytical results for each sample include correct units, detection limits, method used, date sampled, date extracted, date analyzed, dilutions noted.

- Holding times were met.
- Data on field and laboratory duplicate samples for RPDs were within QC limits.
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries were within QC limits.
- Method blanks were within control limits.

5.1.5 Data Useability

The data verification did not identify any reoccurring problems with analytical procedures or analytical reporting. Precision and accuracy for each analytical method as demonstrated by the evaluation or surrogate recoveries, laboratory control samples, MS, and MSD recoveries were satisfactory. The sample identification summaries for all samples and methods were present and complete. No data were found to be invalid. All deficiencies encountered were minor and did not affect the overall quality of the data, since other DQOs were met. Deficiencies were generally the result of matrix interference.

The analytical data generated from the RFI are of sufficient quality to make evaluations and support recommendations.

5.2 Source Characterization

It was previously unknown whether the Building 1030 drains were connected to the Drainage Spillway and if so whether a discharge from the building to the Drainage Spillway had occurred. The sampling plan for the Drainage Spillway directed that a sample be taken from the sump north of the building and held for chemical analysis if dye testing or records indicted a link between the Building 1030 drains and the Drainage Spillway. Although both dye tests indicated that the Building 1030 drains were not connected to the Drainage Spillway, the sump water sample was analyzed for VOCs, SVOCs, metals, TOC, and TPH.

The analytical results of the detected analytes for the source sample are presented in Table 5-1. Appendix B contains a complete listing of the analytical results. Organic constituents found in the water were tetrachloroethene at 16 micrograms per liter (μ g/L), trichloroethene at 11 μ g/L, cis-1,2-dichloroethene at 110 to 120 μ g/L, and TOC at 8.5 to 11 mg/L. Metals found in the water were zinc at 0.027 mg/L, iron at 0.11 mg/L, and lead at 0.0077 to 0.012 mg/L.

Table 5-1

Analytical Results for Source Sample AOC, Drainage Spillway, Tinker AFB

	Well/Boring:	WS-01	.5	WS-0	015
	Sample ID:	A1512	:	A15	13
	Depth in Feet:	0-0		0 -	0
Parameters		Result	QFR	Result	QFR
Metals (mg/L)				<u> </u>	
Iron		1		0.11	
Lead - Graphite Furnace		0.012		0.0077	
Zînc		0.027			
TOC (mg/L)					
Total Organic Carbon		11		8.5	
Volatiles (ug/L)					
Tetrachloroethene		16		16	
Trichloroethene		11		11	
cis-1,2-Dichloroethene		120		110	

B = Analyte was also found in sample blank

E = Concentration exceeds instrument calibration range for that specific analysis

J = Concentration is an estimated value

N = Sample is outside of Matrix Spike QC Limit

< = Not detected

QFR = Qualifier

Analytical data has not been validated

5.3 Contaminant Characterization Results

5.3.1 Establishment of Surficial Soil Background Concentrations

Background soil concentrations for trace metals were determined based on a study performed by the USGS (1991). The study area was confined to approximately four counties in central Oklahoma. Tinker AFB lies at the approximate center of this area. A total of 293 B-horizon soil samples were collected throughout this area. Soil samples were collected at the top of the B-horizon, which was usually 20 to 30 centimeters below the surface but ranged from 3 to 50 centimeters below the surface. For site-specific analytes for which the USGS offered no background value, a site-specific background value was selected for comparison. This site-specific background sampling location was typically from an upgradient monitoring well boring.

The use of B-horizon soil as selected by the USGS for metals background concentrations in soil is conservative in that the soil sampled does not reflect all possible anthropogenic influences. Most of the samples were obtained from hill crests and well drained areas in pasture and forested land, well away from roadways to minimize contamination from vehicular emissions (i.e., nearly "pristine" areas). Trace metal inputs to the study site soils on Base, however, will come from anthropogenic sources outside of the study area, in addition to those sources related to disposal activities or operations within the confines of the study site. Responsibility may therefore be taken for more trace metal impacts than are actually attributable to a given site.

An additional level of conservatism was added in the manner in which the site-specific metals concentrations were compared to the background levels. Typically, the environmental concentrations of trace metals at study sites are represented by the arithmetic upper 95th confidence interval on the mean of a normal distribution. This upper 95th confidence interval value is then compared to the background values. The intent of this typical approach is to estimate a Reasonable Maximum Exposure case (i.e., well above the average case) that is still within the range of possible exposures.

To expedite this comparison and establish greater conservatism, the maximum concentration found at the site of concern, rather than the upper 95th confidence interval value, was compared to the USGS background values. If the environmental concentration of a particular analyte was below or within the minimum-maximum range of the USGS background concentrations, that analyte was considered to be naturally occurring and of no further

concern to this investigation. Given the conservative approach of the comparisons, site-specific metals concentrations would have to significantly exceed the USGS background levels and be attributable to operations at the site before they would be considered a contaminant of concern.

The numerical comparison of site-specific metals concentrations to the USGS background concentrations is presented in the following section.

5.3.2 Soil Characterization

Soils investigation at the site was limited to the sampling of two soil borings hand augered to an 18-inch depth along the Drainage Spillway, which connects the Building 1030 storm drain outfall with Crutcho Creek and the spill pond. These samples were analyzed for VOCs, SVOCs, and priority pollutant metals (aluminum, arsenic, barium, beryllium, cadmium, chromium, chromium VI, copper, iron, lead, mercury, nickel, silver, and zinc). The sediments varied from sandy clay with gravel chunks to clay with fine sand. No discoloration of surface soils was evident.

The analytical results for the detected analytes for the soil samples are presented in Table 5-2. Appendix A contains a complete listing of analytical results. No organic compounds were detected in the soils above the method reporting limit in the soils. A number of metals were found in the soils but at levels within the ranges found in the United States Geological Survey (USGS) Report, "Elemental Composition of Surficial Materials from Central Oklahoma," (1991). The comparison of the metals concentrations in soils to the USGS data is presented in Table 5-3.

A soil boring summary is provided as Table 5-4.

Table 5-2

Analytical Results for Soil AOC, Drainage Spillway, Tinker AFB

	Well/Boring:	SB-01	9	SB-0	20
	Sample ID:	A1506	5	A15	07
	Depth in Feet:	.5 - 1		0	5
Parameters		Result	QFR	Result	QFR
Metals (mg/kg)					
Aluminum		7200	N	9000	N
Arsenic - Graphite Furnace		4.4	N .	4.6	N
Barium		130	N	76	N
Beryllium		1.1		1.1	
Chromium		11		13	
Copper		9		9.8	
Iron		10000	N	13000	N
Lead - Graphite Furnace		8.6	N	8.6	N
Nickel		17	N	20	N
Zinc		20		25	

B = Analyte was also found in sample blank

QFR = Qualifier

Analytical data has not been validated

E = Concentration exceeds instrument calibration range for that specific analysis

J = Concentration is an estimated value

N = Sample is outside of Matrix Spike QC Limit

< = Not detected

Table 5-3
Soil Metals Background Comparison AOC, Drainage Spillway, Tinker AFB

	Site	USGS Background	Concentration
Analyte	Maximum Value (ppm)	Detection Limit (ppm)	Range (ppm)
Aluminum	9,000	50	3,800-89,000
Arsenic	4.6	0.1	0.6-21
Barium	130	1	47-6,400
Beryllium	1.1	1	<1-3
Chromium	13	1	5-110
Copper	9.8	1	<1-59
Iron	13,000	50	1,800-58,000
Lead	8.6	4	<4-27
Nickel	20	2	<2-61
Zinc	25	2	3-79

Table 5-4

RFI Soil Borings Summary AOC, Drainage Spillway, Tinker AFB

		Boring Co	oordinates	Surface	Total Depth	Soil Samples ^a
Boring ID	Date Completed	Northing	Easting	Elevation (msl)	Drilled (f bg s)	Collected for Analysis
SB-019	10/21/93	1507347.212	2179625.925	1227.435	1.5	1
SB-020	10/21/93	150755.821	2179609.357	1226.202	1.5	1
Totals					3.0	2

^aNumber of soil samples collected includes field duplicates.

msl - mean sea level

fbgs - feet below ground surface

6.0 Potential Receptors

A specific potential human and ecological receptor search has not been performed for the Drainage Spillway. Data are available in the form of chemical analysis of soils and sump water; current and future uses of these media; and ecologic and demographic information necessary to initiate a potential receptors search. The following sections describe the data available to begin identification of potential receptors.

6.1 Human Receptors

Tinker AFB is situated on a relatively flat expanse of grassland. Prior to the development of the Base, the area was characterized by large tracts of agricultural land. The Base currently occupies approximately 5,000 acres of semi-improved and unimproved grounds that are used for the airfield, golf course, housing area, offices, shops, and other uses characteristic of military installations.

The Garber-Wellington aquifer, which underlies Tinker AFB, is the single most important source of potable groundwater in the Oklahoma City area. The recharge area for the Garber-Wellington aquifer covers the eastern half of Oklahoma County, including Tinker AFB. Approximately 75 percent of the Base's water supply is obtained from production wells pumping from this aquifer. Industrial operations, individual homes, farm irrigation, and small communities not served by municipal distribution systems also depend on the Garber-Wellington aquifer. Communities, such as Oklahoma City, presently depending upon surface water supplies also maintain a well system drilled into this aquifer as a standby source of water in the event of drought. Lake Stanley Draper, a local surface water supply reservoir with a small portion of its drainage basin within the boundaries of Tinker AFB, serves a significant recreational function as well.

In 1989, approximately 26,000 military and civilian personnel worked at Tinker AFB. Of these, approximately 2,722 personnel occupied on-Base housing, which consisted of 530 family housing units and seven dormitories. At that time, 1,262 of these residents were children. Military personnel and their families who reside on Base represent the nearest receptors to releases from Tinker AFB.

The current land use at and near the Base is not expected to change because the facilities have decades of useful life remaining and the Base has an important and continuing mission.

However, other future land use scenarios and any human receptors associated with those scenarios may need to be considered.

6.2 Ecological Receptors

Tinker AFB lies within a grassland ecosystem, which is typically composed of grasses, forbes, and riparian (i.e., trees, shrubs, and vines associated with water courses) vegetation. This ecosystem has generally experienced fragmentation and disturbances as result of urbanization and industrialization at and near the Base. While no threatened or endangered plant species occur on the Base, the Oklahoma penstemon (*Penstemon oklahomensis*), identified as a rare plant under the Oklahoma Natural Heritage Inventory Program, thrives in several locations on Base. Tinker AFB policy considers rare species as if they were threatened or endangered and provides the same level of protection for these species.

In general, wildlife on the Base is typically tolerant of human activities and urban environments. No federal threatened or endangered species have been reported at the Base. However, one specie found on the Base, the Texas horned lizard (*Phrynosoma cornutum*), is a Federal Category 2 candidate specie and under review for consideration to be listed as threatened or endangered. Air Force policy (AFR 126-1) considers candidate species as threatened or endangered and provides the same level of protection.

The Oklahoma Department of Wildlife Conservation also lists several species within the state as Species of Special Concern. Information on these species suggests declining populations but information is inadequate to support listing, and additional monitoring of populations is needed to determine the species status. These species also receive protection by Tinker AFB as threatened or endangered species. Of these species, the Swainson's hawk (Buteo swainsoni) and the burrowing owl (Athene cunicularia) have been sighted on Tinker AFB. The Swainson hawk, a summer visitor and prairie/meadow inhabitant, has been encountered Basewide. The burrowing owl has been known to inhabit the Air Field at the Base.

7.0 Action Levels

An "action level" is defined by EPA in proposed rule 40 CFR 264.521 (55 FR 30798; 7/27/90), "Corrective Action for Solid Waste Management Units (SWMU) at Hazardous Waste Management Facilities," as a health- and environment-based level, determined by EPA to be an indicator for protection of human health and the environment. In the preamble to this proposed rule, the focus of the RFI phase is defined as "characterizing the actual environmental problems at the facilities." As part of this characterization, a comparison of the contaminant concentrations to certain action levels should be made to determine if a significant release of hazardous constituents has occurred. This comparison is then used to determine if further action or corrective measures are required for a SWMU or an AOC. The preamble to the proposed rule states that the concept of action levels was introduced because of the need for "a trigger that will indicate the need for a Corrective Measures Study (CMS) and below which a CMS would not ordinarily be required" (55 FR 30798; 7/27/90). If constituent concentrations exceed certain action levels at a SWMU or an AOC, further action or a CMS may be warranted; if constituent concentrations are below action levels, a finding of no further action may be warranted. This chapter of the report presents the initial analytical data as compared to certain potential action levels.

Action levels are concentrations of contaminants at or below which exposure to humans or the environment should not produce acute or chronic effects.

The action level information is presented in this chapter so that a constituent concentration at a sample location can be compared with its potential action level. Only constituents identified in the analysis are listed in the AOC, Drainage Spillway table. Table 7-1 shows the action levels for soil, water, and air as published in federal or state regulations, policies, guidance documents, or proposed rules.

The action levels listed in Table 7-1 are:

• **SWMU Corrective Action Levels (CAL)** - The first set of action levels provided in the table are those taken from the proposed rule (40 CFR 264.521) and provided as Appendix A to the rule as "Examples of Concentrations Meeting Criteria for Action Levels." These levels are health-risk based and are provided

Table 7-1 **Action Level** AOC, Drainage Spillway, Tinker AFB

	SWMU CAL ^a	USGS ^b Background	SB-019	SB-20
Parameters	Soil (mg/kg)	Soil (mg/kg)	Range (mg/kg)	Range (mg/kg)
Aluminum		89,000	7,200	9,000
Arsenic	80	21	4.4	4.6
Barium	4,000	6,400	130	76
Beryllium	0.2	3	1.1	1.1
Chromium		110	11	13
Copper		59	9.0	9.8
Iron		58,000	10,000	13,000
Lead		27	8.6	8.6
Nickel	2,000	61	17	20
Zinc		79	20	25

^aCAL - Corrective Action Levels. ^bUSGS - United States Geological Survey.

as specific examples of levels below which corrective action would not be required.

Table 7-1 also gives a brief comparative evaluation of the data collected and the related action levels. The data for each detected compound are compared with the appropriate action level in order to identify those constituents (compounds) with concentrations exceeding the action levels. This identification of the compounds above the action levels provides an indication of a potential environmental problem at a specific site. In addition, this information indicates whether there is a need for conducting a CMS so that a corrective action can be implemented/undertaken at the site.

The data included in Table 7-1 are representative of the data presented in Chapter 5.0. For each soil boring, a range was identified and used in the comparison to the action levels.

The only constituent found above an action level was that for beryllium in soil. Beryllium was detected at 1.1 mg/kg and the SWMU CAL for beryllium in soils is 0.2 mg/kg. This concentration of beryllium in soil is approximately one-third the level of beryllium found naturally occurring in regional soils, which, according to the USGS, is 3 mg/kg. Beryllium is, therefore, not a constituent of concern.

8.0 Summary and Conclusions

8.1 Summary

A Phase I RFI was conducted at the Drainage Spillway, to determine the impact, if any, of Building 1030 operations on the Drainage Spillway. During the investigation, a source characterization sample was collected from the sump located north of Building 1030 and analyzed for VOCs, SVOCs, metals, TPH, and TOC. Flow tests were conducted from the floor drains located in Building 1030, which indicated that the floor drains were connected to the sanitary sewers and not to the Drainage Spillway. No contaminants of concern were found in the sump water.

Two soil samples were collected from two shallow soil borings performed along the Drainage Spillway connecting the storm drain outfall with the spill pond. The soil samples were analyzed for VOCs, SVOCs, and metals. Based on the analytical results of the soils, there is no indication of a release or impact to the soils in the drainage area below the outfall. Although one metal exceeded the SWMU CAL for soil, it and every other metal detected were within the background ranges as reported by USGS. No constituents of concern were found in the soil.

8.2 Conclusions

Because no constituents of concern were found in the soils or the sump water and flow testing indicated that the wash water from Building 1030 drained to the sanitary sewers and not to the spill pond, Building 1030 operations have not impacted the Drainage Spillway. The surface water runoff from the Drainage Spillway is presently being sampled weekly per the NPDES Permit, Storm Water Monitoring Program.

9.0 Recommendations for Additional Work

Based on the conclusions of the RFI conducted at the Drainage Spillway, no further action is recommended for this site.

10.0 References

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APPENDIX A SOIL SAMPLE COLLECTION LOGS





DATE	1	C)	ઝ	1	C	i	3
TIME								Y
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SAMPLE COLLECTION LOG

Tinter 5001

SAMPLE NOSCCACTOOS		
SAMPLE LOCATION Spill Pond		
SAMPLE TYPE Grab - Soil	CONTAINERS	AMOUNT
COMPOSITEYES _X_NO	USED	COLLECTED
COMPOSITE TYPE	125 mi	
DEPTH OF SAMPLE <u>See below</u>	500 ml	
WEATHER clear, warm ~ 70° F		
COMMENTS:		
1506 & SB-019 Sample tohen Scil is slayey Sand Sandy	. at 1650 fro cloy, nonplestic, (108 4)	im 6-12" red 30% fin Sand, Di 30% clay iome emuel chunks
A 1507 SB-020 Sample toten a	t 1708 from	0"-6" intonio
5011 is sandy clay, = slig 1508 Trip Blank sampled on 11	Solurated be	-30% time same 1010 clong low 6". (IOR 418) 40 ml VOA BDYO VOC

PREPARED BY: Matthew Wilson

APPENDIX B

DATA TABLES, CERTIFICATES OF ANALYSIS AND CHAIN-OF-CUSTODY

ANALYTICAL RESULTS SOURCE SAMPLES

Well/Boring: Sample 1D: Depth:	3<0	WS-015 A1512 0 - 0		21K0	WS-015 A1513 0 - 0		
Parameters	Resul t	of R	Units	Result	OFR	Units	
•		:					
	%.50 .50	-	mg/l	<0.20 <0.20	>	mg/l	
Arsenic - Graphite Furnace	<0.010 <0.010	>	mg/l	.0.010	>	mg/t	
Barium	<0.20	>	mg/l	<0.20	>	mg/l	
Beryllium	<0.0050	>	mg/l	<0.0050	-	J/Bm	
Cadmium	<0.0050	>	mg/l	<0.0050	>	1/6m	
Chromium	<0.010	>	mg/l	<0.010	>	mg/l	
Copper	<0.025	>	mg/t	<0.025	-	mg/l	
Iron	60.10	-	mg/l	0.11		mg/l	
Lead - Graphite Furnace	0.012		mg/l	0.0077		mg/l	
Mercury	<0.00080	>	mg/l	<0.00020	-	mg/l	
Nickel	<0.040	>	mg/l	<0.040	>	mg/l	
Silver	<0.010	>	mg/l	<0.010	>	mg/l	
Zinc	0.027		mg/l	<0.020	-	mg/l	
1,2,4-Trichlorobenzene	^10	>	ug/l	^10	>	1/gn	
1,2-Dichlorobenzene	~10	>	1/6n	1 0	>	ug/l	
1,3-Dichlorobenzene	<10	>	1/6n	1 0	>	ug/l	
1,4-01chlorobenzene	1.2	8	1/6n	~10	-	1/6n	
2,4,5-Irichlorophenol	°10	>	l/gn	^10	>	ng/l	
2,4,6-Trichlorophenol	°10	> :	J/gn	~10	>	ug/l	
2,4-Dichiorophenol	~10	-)/gn	1 0	>	1/gn	
2,4-Dimethylphenol	~10 .i	- :	l/gn	~1 0	>	l/gn	
2,4-Dinitrophenol	Ş;	> :	ng/l	4 25	-	ng/l	
Z,4-Dinitrotoluene	0L>	>	1/6n	~10	>	1/6n	
2,6-Dinitrotoluene	1 0	-	1/6n	1 0	>	1/6n	
2-Chloronaphthalene	~10	>	ug/l	~10	>	J/gn	
2-Chlorophenol	~10	>	ug/l	~10	>	1/6n	
2-Methylnaphthalene	~10	-	ug/I	1 0	_	ng/l	
2-Methylphenol	1 0	>	ug/l	~10	>	1/gn	
2-Nitroaniline	<25	>	ug/l	< 25	_	J/gn	
2-Nitrophenol	1 0	>	1/6n	~10	_	ng/f	
3,3'-Dichlorobenzidine	~10	-	1/6n	1 0	>	ng/l	

B = Analyte was also found in sample blank
 E = Concentration exceeds instrument calibration range for that specific analysis
 J = Concentration is an estimated value
 N = Sample is outside of Matrix Spike QC limit
 < = Not detected
 QFR = Qualifier
 Analytical data has not been validated.

	ļ	I
	Units	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n
WS-015 A1513 0 - 0	OFR	¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬
340	Result	\$
	Units	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n
WS-015 A1512 0 - 0	QFR	
340	Result	2222222222222222222222222222222222222
Well/Boring: Sample 1D: Depth:	Parameters	3-Nitroaniline 4,6-Dinitro-2-methylphenol 4-Bromophenyl-phenylether 4-Chloroa-3-methylphenol 4-Chloroaniline 4-Chlorophenyl-phenylether 4-Chlorophenyl-phenylether 4-Chlorophenyl-phenol 4-Nitrophenol Acenaphthylene Acenaphthylene Benzo(a)anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(b)fluoranthene Benzo(b)fluoranthene Benzo(y)fluoranthene Benzo(y)fluoranthene Benzo(x)fluoranthene Benzo(x)fluoranthene Benzo(x)fluoranthene Benzo(x)fluoranthene Benzo(x)fluoranthene Benzo(x)fluoranthene Benzo(x)fluoranthene Benzo(a,h)anthracene Di-n-octylphthalate Dibenzo(a,h)anthracene Dibenzo(a,h)anthracene Dibenzo(a,h)anthracene Dimethylphthalate Eluoranthene Fluoranthene Fluoranthene Hexachlorobenzene

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for
that specific analysis
J = Concentration is an estimated value
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Analytical data has not been validated.</pre>

B = Analyte was also found in sample blank
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that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.

	Units		1/br	1/6r	1/6r	1/6r	1/6r	1/6r	1/br	1/br)/gr	1/6r	1/6r	1/6r	1/br	1/6r	1/6r	J/Br	1/br	J/Br	J/Bi	1/br	ig/l	ug/l
WS-015 A1513 0 - 0	OFR U	ח	ر ت	ر ت	ر د	ر ت	ر ت	ر ح	ر ت	ر د	ر د	כ	ر ت	ر د	ر	ر ت	ر	ر	כ	כ	ر ت	ر	ر ت	ر ت
	Result	\$	^10	Ą	Ą	ۍ	٠	~10	٠	10	څ.	٠	10	٨	16	ۍ	=	1 0	1 0	ŵ	ئ	110	ŵ	î,
	Units	1/6n	1/6n	1/gn	1/6n	1/gn	J/gn	ug/l	ug/l	ug/l	ug/l	1/gn	1/gn	1/6n	1/60	1/6n	ug/l	ug/t	1/6n	1/6n	1/6n	J/gn	1/6n	ug/l
WS-015 A1512 0 - 0	OFR	כ	>	-	>	>	>	>	>	>	>	>	>	>		-		>	-	>	_		>	>
340	Result	\$	1 0	ئ	ŵ	ŵ	ئ	10	څ.	1 0	ئ	ئ	~10	ئ	16	څ	7	1 0	1 0	Ą	Ą	120	ئ	ئ
Well/Boring: Sample ID: Depth:																					e		ene	ne
	Parameters	Bromoform	Bromomethane	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	Dichlorobromomethane	Ethylbenzene	Methylene Chloride	Styrene	Tetrachloroethene	Toluene	Trichloroethene		Vinyl Chloride	Xylenes (total)	cis 1,3 Dichloropropene	cis-1,2-Dichloroethene	trans 1,3-Dichloroproper	trans-1,2-Dichloroethene

B = Analyte was also found in sample blank
 E = Concentration exceeds instrument calibration range for that specific analysis
 J = Concentration is an estimated value
 N = Sample is outside of Matrix Spike QC limit
 Not detected
 QFR = Qualifier
 Analytical data has not been validated.

ANALYTICAL RESULTS SOIL

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	Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	i i
SB-020 A1507 05	OFR		Z	z	z		>		>		z	2	>	Z	>		>	>	>	>	>	>	>	>	>	>	>	>	>	>	>	>	>	
ω ∢ 0	Result		0006	9.4	92	1.1	<0.58	13	.0.	8.6	13000	9.6	<0.022	5 0	<1.2	52	<0.330	<0.330	<0.330	<0.330	<0.825	<0.330	<0.330	<0.330	<0.825	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.825	<0.330	
	Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
SB-019 A1506 .5 - 1	OFR		æ	æ	Z		>		>		Z	z	>	Z	>		>	>	>	>	>	>	>	>	>	>	>	>	>	>	>	>	>	
	Result		200	4.4	130	-:	<0.52	=	<0.10	0.6	10000	9.6	<0.02	17	۸.۰	20	<0.330	<0.330	<0.330	<0.330	<0.825	<0.330	<0.330	<0.330	<0.825	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.825	<0.330	
Well/Boring: Sample 1D: Depth:	Parameters			Arsenic - Graphite Furnace	Barium	Beryllium	Cadmium	Chromium	Chromium VI	Copper	Iron	Lead - Graphite Furnace	Mercury	Nickel	Silver	Zinc	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	2,4-Dinitrophenol	2,4-Dinitrotoluene	2,6-Dinitrotoluene	2-Chloronaphthalene	2-chlorophenol	2-Methylnaphthalene	2-Methylphenol	2-Nitroaniline	2-Nitrophenol	

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Parameters 3,3:-Dichlorobenzidine 3-Nitroaniline 4,6-Dinitro-2-methylphenol 4-Bromophenyl-phenylether 4-Chloro-3-methylphenol 4-Chloroaniline 4-Chlorophenyl-phenylether 4-Hethylphenol 6-Hiroaniline	41					
enol her l ther	Result	QFR	Units	Result	QFR	Units
enol her l ther	022 07	=	24/00	022 07	=	1/00
enol her l ther		> :	BY/FIII	0000	> :	g/kg
methylphenol phenylether hylphenol e phenylether	<0.825	>	mg/kg	<0.852	>	mg/kg
phenylether hylphenol e -phenylether	<0.825	-	mg/kg	<0.825	>	mg/kg
hylphenol e -phenylether	<0.330	>	mg/kg	<0.330	>	ma/kg
e -phenylether	<0.330	>	mg/kg	<0.330	-	mg/kg
-phenylether	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.825	>	mg/kg	<0.825	>	mg/kg
4-Nitrophenol	<0.825	>	mg/kg	<0.825	>	mg/kg
Acenaphthene	<0.330	>	mg/kg	<0.330	>	mg/kg
Acenaphthylene	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	>	mg/kg	<0.330	>	mg/kg
cene	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	>	mg/kg	<0.330	>	mg/kg
zylphthalate	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	>	mg/kg	<0.330	>	mg/kg
	0.082	8	mg/kg	0.27	용	mg/kg
anthracene	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	>	mg/kg	<0.330	>	mg/kg
alate	<0.330	>	mg/kg	<0.330	>	mg/kg
Jene	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	-	mg/kg	<0.330	>	mg/kg
robenzene	<0.330	>	mg/kg	<0.330	-	mg/kg

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 N = Sample is outside of Matrix Spike QC limit
 Not detected
 QFR = Qualifier
 Analytical data has not been validated.

Sample ID: Depth:	• •	A1506 .5 - 1		v ∢ 0	SB-020 A1507 05	
Parameters	Result	o FR	Units	Result	o R	Units
Hexach orobitediene	025 0>	=	ma/ka	0.330	=	mo/ka
Hexach orocol opentadione	330	=	mg/kg	40.330	=	mo/ko
Hexachloroethane	<0.330	=	mg/kg	<0.330	=	mo/ka
Indeno(1,2,3-cd)byrene	<0.330	-	ma/ka	<0.330	· =	ma/ka
Sophorone	<0.330	· -	mg/kg	<0.330)	mg/kg
N-Nitroso-di-n-propylamine	<0.330	>	mg/kg	<0.330	>	mg/kg
N-Nitrosodiphenylamine	<0.330	>	mg/kg	<0.330	>	mg/kg
Naphthalene	<0.330	>	mg/kg	<0.330	>	mg/kg
Nitrobenzene	<0.330	>	mg/kg	<0.330	>	mg/kg
Pentachlorophenol	<0.825	>	mg/kg	<0.825	_	mg/kg
Phenanthrene	<0.330	>	mg/kg	<0.330	>	mg/kg
Phenol	<0.330	>	mg/kg	<0.330	_	mg/kg
Pyrene	<0.330	>	mg/kg	<0.330	>	mg/kg
bis(2-Chloroethoxy)methane	<0.330	-	mg/kg	<0.330	>	mg/kg
bis(2-Chloroethyl)ether	<0.330	>	mg/kg	<0.330	>	mg/kg
bis(2-Chloroisopropyl)ethe	<0.330	>	mg/kg	<0.330	>	mg/kg
bis(2-Ethylhexyl)phthalate	<0.330	>	mg/kg	<0.330	>	mg/kg
1,1,1-Trichloroethane	ئ	>	ug/kg	ئ	>	ug/kg
1,1,2,2-Tetrachloroethane	ئ	>	ug/kg	ŵ.	>	ug/kg
1,1,2-Trichloroethane	ۍ	>	ug/kg	ψ,	-	ug/kg
1,1-Dichloroethane	ŵ	>	ug/kg	\$	>	ug/kg
1,1-Dichloroethene	٨	>	ug/kg	ئ	>	ug/kg
1,2-Dichloroethane	ځ ک	>	ug/kg	ئ	>	ug/kg
1,2-Dichloropropane	ئ	_	ug/kg	ئ	>	ug/kg
2-Butanone	2.8	8	ug/kg	4.5	8	ug/kg
2-Chloroethylvinyl ether	10	>	ug/kg	10	>	ug/kg
2-Hexanone	~ 50	>	ug/kg	< 50	>	ug/kg
4-Methyl-2-Pentanone	~ 20	>	ug/kg	~ 50	>	ug/kg
Acetone	9.7	8	ug/kg	5.0	8	ug/kg
Benzene	ۍ	>	ug/kg	\$	>	ug/kg
Bromoform	ψ,	=	04/01	ς,	=	ויט/גט

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that specific analysis
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	Well/Boring: Sample ID: Depth:		SB-019 A1506 .5 - 1		W 4 0	SB-020 A1507 05	
Parameters		Result	OFR	Units	Result	Q. R.	Units
Bromomethane		40	=	ua/ka	40	=	ua/ka
Carbon Disulfide		ιδ	· >	ug/ka	φ.		ua/ka
Carbon Tetrachloride		ŵ	· -	ug/kg	ŵ	· >	ug/kg
Chlorobenzene		ŵ	>	ug/kg	څ.	>	ug/kg
Chlorodibromomethane		ئ	-	ug/kg	ئ	>	ug/kg
Chloroethane		1 0	>	ug/kg	1 0	>	ug/kg
Chloroform		څ.	-	ug/kg	ئ	>	ug/kg
Chloromethane		1 0	>	ug/kg	1 0	-	ug/kg
Dichlorobromomethane		ئ	>	ug/kg	ئ	-	ug/kg
Ethylbenzene		٨	>	ug/kg	ئ	>	ug/kg
Methylene Chloride		1 0	>	ug/kg	7.5	8	ug/kg
Styrene		û	>	ug/kg	ۍ	>	ug/kg
Tetrachloroethene		ŵ	>	ug/kg	.	>	ug/kg
Toluene		ŵ	>	ug/kg	\$	>	ug/kg
Trichloroethene		ŵ	>	ug/kg	ئ	>	ug/kg
Vinyl Acetate		1 0	>	ug/kg	1 0	>	ug/kg
Vinyl Chloride		10	>	ug/kg	1 0	>	ug/kg
Xylenes (total)		ŵ	>	ug/kg	ئ	>	ug/kg
۳,	2	ŵ	>	ug/kg	ئ	>	ug/kg
cis-1,2-Dichloroethene	a	ŵ	>	ug/kg	\$	>	ug/kg
trans 1,3-Dichloropropene	sene	ئ	>	ug/kg	ئ	>	ug/kg
trans-1,2-Dichloroethene	ene ene	ئ	>	ug/kg	ئ	>	ug/kg

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ANALYTICAL RESULTS

QUALITY CONTROL

FIELDQC A1515 0 - 0	Result QFR Units	
	Units	
FIELDOC A1514 0 - 0	QFR	
u.	Result	66.66.66.66.66.66.66.66.66.66.66.66.66.
	Units	
FIELDOC A1508 0 - 0	QFR	
u .	Result	·
Well/Boring: Sample ID: Depth:	Parameters	Aluminum Arsenic - Graphite Furnace Barium Beryllium Cadmium Cadmium Copper Iron Lead - Graphite Furnace Mercury Nickel Silver 1,2,4-Trichlorobenzene 1,3-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol 2,4,6-Trichlorophenol 2,4-Dinitrophenol 2,4-Dinitroplenol 2,4-Dinitroplenol 2,4-Dinitroplenol 2,4-Dinitroplenol 2,5-Dinitroplenol 2,5-Dinitroplenol 2,5-Dinitroplenol 2,5-Dinitroplenol 2,5-Dinitroplenol 2,5-Dinitroplenol 2,5-Dinitroplenol 2,6-Dinitroplenol 2,6-Dinitroplenol 2,6-Dinitroplenol 2,6-Dinitroplenol 2,6-Dinitroplenol 2,6-Dinitroplenol 2,6-Dinitroplenol 2,6-Dinitroplenol 2-Fluorophenol 2-Fluorophenol 2-Fluorophenol 2-Methylphenol

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	_	•		_	0 - 0			o - o	
Parameters	Resul t	QFR	Units	Result	AFR.	Units	Result	AFR.	Units
2-Nitroaniline		-		\$	-	1/gn			
enot				1 0	-	1/6n			
orobenzidine				1 0	>	l/gu			
line				\$	-	1/60			
o-2-methylphenol				4 25	-	1/60			
4-Bromophenyl-phenylether				1 0) >	1/6n			
-methylphenol				~10	-	1/60			
4-Chloroaniline				1 0	· >	1/60			
4-Chlorophenyl-phenylether				1 0	>	l/gu			
4-Methylphenol				~10	>	1/60			
4-Nitroaniline				~10	>	1/6n			
4-Nitrophenol				<25	>	1/gn			
Acenaphthene				~10	>	1/6n			
Acenaphthylene				~10	>	1/gn			
Anthracene				1 0	>	1/6n			
Benzo(a)anthracene				~10	>	1/6n			
rene				~10	_	1/gn			
Benzo(b)fluoranthene				~10	>	1/gn			
Benzo(g,h,i)perylene				1 0	_	1/gn			
uoranthene				1 0	>	1/6n			
Benzoic Acid				1 0	>	1/gn			
Benzyl alcohol				1 0	-	1/gn			
Butylbenzylphthalate				,	-	1/gn			
				1 0	>	1/gn			
Di-n-butylphthalate				~10	>	1/60			
				^ 10	>	1/6n			
h)anthracene				1 0	>	1/6n			
Dibenzofuran				1 0	-	1/gn			
Diethylphthalate				~10	-	l/gn			
Dimethylphthalate				~10	>	l/gn			
Fluoranthene				~10	>	ng/f			

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	Units	7/60 na/1 na/1 na/1 na/1
FIELDQC A1515 0 - 0	Q.F.R	22222
2	Result	. &&&&& <u>\$</u>
	Units	7,500 1,600 1,
FIELDQC A1514 0 - 0	QFR	¬¬¬¬¬¬¬¬¬¬
FI O	Resul t	\$
	Units	mg/l ng/l ng/l ng/l ng/l
FIELDOC A1508 0 - 0	QFR	
E -	Result	సిసి సిసి సిసి సిసి సిసి సిసి సిసి సిస
Well/Boring: Sample ID: Depth:	Parameters	Fluorene Hexachlorobatadiene Hexachlorobutadiene Hexachlorocyclopentadiene Hexachlorocyclopentadiene Hexachlorocyclopentadiene Hexachlorocyclopentadiene Hexachlorocyclopentadiene Indenof1,2,3-cd)pyrene Isophorone N.Nitroso-di-n-propylamine N.Nitroso-di-n-propylamine N.Nitrosodiphenylamine N.Nitrosodiphenylamine N.Nitrobenzene-D5 Pentachlorophenol Phenol Phe

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Analytical QC results at the SP for WQ Tinker Air Force Base

Yel S	Well/Boring: Sample ID: Depth:	F	1ELDQC A1508 0 - 0		E 40	TELDQC A1514 0 - 0		E 40	:TELDQC A1515 0 - 0		
Parameters		Result	QFR	Units	Result	QFR	Units	Result	OFR.	Units	
1 2-Dichlonomond		ų	=	1/ =::	ų	=	14 -1.	ų	=		
1, 2-pichiolopiopane		,	> :) Son	Ç.	> :	1/6n	Ç.	>	1/6n	
		, 100	- :)/gn	2100	> :	l/gu	~1 00	>	1/6n	
Z-Chloroethylvinyl ether		210	>	1/gn	0L>	>	1/6n	~10	>	1/gn	
2-Hexanone		^ 50	>	1/gn	~ 20	>	1/6n	5 0	>	J/gu	
4-Methyl-2-Pentanone		<50	>	1/gn	\$ 0	>	1/6n	\$ 0	5	1/60	
Acetone		<100	>	1/6n	٠100 د	-	1/6n	×100	-	1/60	
Benzene		ŵ	-	1/60	ŵ	>	1/60	\$	¬	7/80	
Bromofluorobenzene		98		%rec	101		%rec	102		%rec	
Bromoform		\$	>	ug/t	ئ	>	J/gu	ŕ\$	>	J/BN	
Bromomethane		~10	>	1/ B D	1 0	>	1/6n	1 0	>	1/60	
		گ	>	1/6n	ŵ	>	1/Bn	ŵ	_)/Bn	
Carbon Tetrachloride		گ	>	1/gn	ŵ	>	1/6n	ŵ	_	1/bn	
Chlorobenzene		څ.	>	1/6n	څ.	>	1/gn	ŵ	_	1/6n	
Chlorodibromomethane		څ	-	1/gn	٠Ĉ	>	1/6n	ۍ	>	J/Bn	
Chloroethane		~10	>	1/6n	~10	>	ug/t	1 0	>	1/gn	
Chloroform		ۍ	>	1/gn	څ	>	ng/l	ۍ	¬	1/6n	
Chloromethane		~10	-	ng/f	1 0	>	1/gn	~10	>	l/gn	
Dichlorobromomethane		÷.	>	ug/f	څ	>	l/gu	ĉ.	>	ng/l	
Ethylbenzene		\$	>	J/gn	ŵ	>	ng/l	ۍ	>	ng/l	
Methylene Chloride		~10	>	1/gn	1 0	>	1/gn	1 0	>	l/gn	
Styrene		\$	>	1/6n	ŵ	>	ng/l	ĉ,	-	l/gn	
Tetrachloroethene		\$	-	1/gn	ŵ	>	1/6n	څ.	>	1/gn	
Toluene		\$	>	J/gu	ŵ	>	1/6n	ئ	-	1/6n	
Toluene-D8		93		%rec	52		Xrec	95		Xrec	
Trichloroethene		ĉ.	>	/gn	ŵ	>	1/gn	ŵ	>	1/6n	
Vinyl Acetate		^10	>	J/gu	^10	>	1/gn	1 0	>	1/6n	
Vinyl Chloride		^10	>	J/gu	^10	>	1/gn	1 0	>	1/6n	
Xylenes (total)		څ	_	J/gu	ئ	>	1/6n	ŵ	>)/6n	
cis 1,3 Dichloropropene		Ŝ.	>	J/gu	څ.	>	1/gn	ŵ	>	1/6n	
cis-1,2-Dichloroethene		څ.	>	1/Bn	ŵ	>	1/6n	ŵ	>	1/60	
trans 1.3-Dichloropropene		\$	¬	1/60	Α.	=	1/01	څ.	=	1/011	
				;	1	,	,	ļ	,		

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Analytical QC results at the SP for WQ Tinker Air Force Base

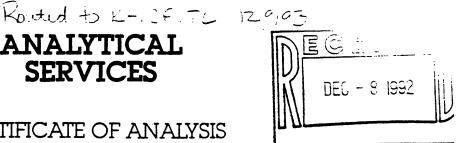
Well/Boring: Sample ID: Depth:	ing: Dth:	F O	TELDOC A1508 0 - 0		<u></u>	TELDOC A1514 0 - 0		H.	:IELDQC A1515 0 - 0		
Parameters	æ	Result OFR	OFR	Units	Resul t	QFR	Units	Result	OFR	Units	
trans-1,2-Dichloroethene	Æ)	1/gn	گ	>) 1/6n	\$	ס	1/6n	l

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that specific analysis
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ANALYTICAL



CERTIFICATE OF ANALYSIS

IT CORPORATION 1250 CAPITAL OF TX HWY BLDG. 3, SUITE 200 AUSTIN, TX 78746-6443 TIM JENNINGS

Work Order: B3-10-300

This is the Certificate of Analysis for the following samples:

Client Work ID: D.O.5001 Date Received: 10/22/93 Number of Samples: 25 Sample Type: WATER/SOIL

409832-003-01

Date: 12/06/93

Introduction I.

Samples were labeled as follows:

SAMPLE IDENTIFICATI	ON LABORATORY #
A1013	B3-10-300-01
A1014	B3-10-300-02
A1015	B3-10-300-03
A1016	B3-10-300-04
A1017	B3-10-300-05
A1018	B3-10-300-06
A1019	B3-10-300-07
A1019-MS	B3-10-300-08
A1019-MSD	B3-10-300-09
A1020	B3-10-300-10
A1021	B3-10-300-11
A1500	B3-10-300-12
A1501	B3-10-300-13

Reviewed and Approved:

Jon Bartell

Laboratory Director

Page: 2 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

Samples, continued from above:

LABORATORY #
B3-10-300-14
B3-10-300-15
B3-10-300-16
B3-10-300-17
B3-10-300-18
B3-10-300-19
B3-10-300-20
B3-10-300-21
B3-10-300-22
B3-10-300-23
B3-10-300-24
B3-10-300-25

II. QA/QC

The results presented in this report meet the statement of work requirements in accordance with Quality Control and Quality Assurance protocol except as noted in Section IV or in an optional sample narrative at the end of Section III.

In the presented analytical data, 'ND' or '<' indicates that the compound is not detected at the specified limit.

III. Analytical Data

The following page(s) supply results for requested analyses performed on the samples listed above.

The test results relate to tested items only. ITAS-Austin reserves the right to control report production except in whole.

Page: 3 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 802-6684: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1013
SAMPLE DATE: 10/19/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 10/31/93
DILUTION FACTOR: 1.0

UNITS: UG/L

•		R	eporting				Re	portir
	Result Qu	al	Limit		Result	Qual	L	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1.1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
-Dichloroethane	5	U	5	Bromoform		5	U	5
.ns-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	υ	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	94	88 - 110
BROMOFLUOROBENZENE	95	86 - 115
1,2-DICHLOROETHANE-D4	102	76 - 114

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Referenced notes for these results:

Sample was run by Method 624. A nonconformance was filed.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

SAMPLE ID: A1014

SAMPLE DATE: 10/21/93 08:00:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units		Reference
Chromium VI		0.100	0.10	MG/KG	11/02/93	EPA7196

Page: 5 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1014

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/04/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Re	eport:
	Result Q	ual	Limit		Result	Qua	1	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	!
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	!
Vinyl chloride	10	Ū	10	Trichloroethene		5	U	!
Chloroethane	10	U	10	Chlorodibromomethane		5	U	!
Methylene chloride	1.1	J	10	1,1,2-Trichloroethane		5	U	!
Acetone	7.1	JB	100	Benzene		5	U	!
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	!
1,1-Dichloroethene	5	ט	5	2-Chloroethylvinyl ether		10	U	1(
1-Dichloroethane	5	ט	5	Bromoform		5	U	!
.ans-1,2-Dichloroethene	5	ับ	5	2-Hexanone		50	Ū	51
cis-1,2-Dichloroethene	5	ט	5	4-Methyl-2-pentanone		50	U	5(
Chloroform	5	บ	5	Tetrachloroethene		5	U	!
1,2-Dichloroethane	5	υ	5	1,1,2,2-Tetrachloroethane		5	U	
2-Butanone	100) ซ	100	Toluene		5	U	
1,1,1-Trichloroethane	5	נ נ	5	Chlorobenzene		5	U	
Carbon tetrachloride	5	τ	5	Ethylbenzene		5	U	
Vinyl acetate	10) T	10	Styrene		5	U	
Dichlorobromomethane	5	5 T	5	Xylenes, total		5	U	

Surrogates	<pre>% Recovery</pre>	Limits
TOLUENE-D8	101	81 - 117
BROMOFLUOROBENZENE	100	74 - 121
1.2-DICHLOROETHANE-D4	111	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 6 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1014

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 10/29/93 ANALYSIS DATE: 11/02/93 DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			I	Report
Re	sult	Qual	Limit		Result	Qual	Limi
Phenol	0.330	_	0.330	2,6-Dinitrotoluene	0.330		0.330
bis(2-Chloroethyl)ether	0.330	_	0.330	3-Nitroaniline	0.825		0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330		0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.825		0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.825		0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.330		0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.330		0.330
^-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330		0.330
<pre>1(2-Chloroisopropyl)ether</pre>	0.330	U (0.330	4-Chlorophenyl-phenylether			0.330
Methylphenol	0.330	U	0.330	Fluorene	0.330		0.330
N-Nitroso-di-n-propylamine	0.330	ט (0.330	4-Nitroaniline	0.825		0.825
Hexachloroethane	0.330	U (0.330	4,6-Dinitro-2-methylphenol			0.825
Nitrobenzene	0.330	U (0.330	N-Nitrosodiphenylamine (1)			0.330
Isophorone	0.330	ט כ	0.330	4-Bromophenyl-phenylether	0.330		0.330
2-Nitrophenol	0.330	U (0.330	Hexachlorobenzene	0.330		0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.82		0.825
Benzoic Acid	0.330	ט (0.330	Phenanthrene	0.330		0.330
bis(2-Chloroethoxy)methane	0.330	บ (0.330	Anthracene	0.330		0.330
2,4-Dichlorophenol	0.330	ט כ	0.330	Di-n-butylphthalate	0.330		0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330		0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330		0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	ט כ	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330		0.330
4-Chloro-3-methylphenol	0.330	ט כ	0.330	Benzo(a)anthracene	0.330	υ (0.330
2-Methylnaphthalene	0.330	υ (0.330	Chrysene	0.330		0.330
Hexachlorocyclopentadiene	0.330	ט כ	0.330	bis(2-Ethylhexyl)phthalate	0.330	ט כ	0.330
2,4,6-Trichlorophenol	0.330	ט כ	0.330	Di-n-octylphthalate	0.06	JB	0.330
2,4,5-Trichlorophenol	0.825	5 U	0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	ט כ	0.330	Benzo(k)fluoranthene	0.330	ט כ	0.330
2-Nitroaniline	0.825	5 U	0.825	Benzo(a)pyrene	0.33	ט כ	0.330
Dimethylphthalate	0.330	ט כ	0.330	Indeno(1,2,3-cd)pyrene	0.33	ט כ	0.330
Acenaphthylene	0.330	ט כ	0.330	Dibenzo(a,h)anthracene	0.330		0.330
-				Benzo(g,h,i)perylene	0.330	ט כ	0.330

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1014

SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

Surrogates .	% Recovery	Limits
Nitrobenzene-D5	77	23 - 120
2-Fluorobiphenyl	78	30 - 115
Terphenyl-D14	85	18 - 137
Phenol-D5	69	24 - 113
2-Fluorophenol	68	25 - 121
2,4,6-Tribromophenol	74	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 8 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1014

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 113.636

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.4	n	1.0	7060	11/09/93
Aluminum	8600	N*	23	6010	11/23/93
Barium	98	N*	23	6010	11/23/93
Beryllium	0.87		0.57	6010	11/23/93
Cadmium	0.57	บ	0.57	6010	11/23/93
Chromium	12		1.1	6010	11/23/93
Copper	7.1		2.8	6010	11/23/93
Iron	11000	N*	11	6010	11/23/93
Nickel	12	N	4.5	6010	11/23/93
Lead	5.3	N	0.30	7421	11/09/93
Mercury	0.020	U	0.020	7471	11/06/93
Silver	1.1	Ū	1.1	6010	11/23/93
Zinc	19	-	2.3	6010	11/23/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance</p>
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892 6684: B3-10-300

SAMPLE ID: A1015

SAMPLE DATE: 10/21/93 08:20:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.100	0.10	MG/KG	11/02/93	EPA7196

Page: 10 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1015 SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 11/03/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

01.2201 00/1.0									
			Repor	ting				Re	porti
	Result	Qual	Lim	iit		Result	Qua!	L	Limit
Chloromethane	1	LO	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	1	LO	บ	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	1	LO	บ	10	Trichloroethene		5	U	5
Chloroethane	1	LO	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	6.	. 9	J	10	1,1,2-Trichloroethane		5	U	5
Acetone	8.	. 4	J 1	.00	Benzene		5	U	5
Carbon disulfide		5	U	5	cis-1,3-Dichloropropene		5	U	5
1.1-Dichloroethene		5	บ	5	2-Chloroethylvinyl ether	,	10	U	10
-Dichloroethane		5	U	5	Bromoform		5	U	5
. uns-1,2-Dichloroethene		5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene		5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform		5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	4.	.6 J	В 1	.00	Toluene		5	U	5
1,1,1-Trichloroethane		5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5	บ	5	Ethylbenzene		5	U	5
Vinyl acetate		10	U	10	Styrene		5	U	5
Dichlorobromomethane		5	บ	5	Xvlenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	99	81 - 117
BROMOFLUOROBENZENE	100	74 - 121
1,2-DICHLOROETHANE-D4	103	70 - 120

- U none detected
- ${\tt J}$ estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

409832-003-01⁽⁵¹²)872-0736r: B3-10-300

TEST NAME: ABE HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1015 SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 10/29/93 ANALYSIS DATE: 11/02/93 DILUTION FACTOR: 0.033

Phenol	UNITS: MG/KG		R	eporting			1	Report
No.	Re	sult	Qual	Limit		Result	Qual	Limi
District	•							
2-Chlorophenol 0.330 U 0.330 Acenaphthene 0.330 U 0.330 1,3-Dichlorobenzene 0.330 U 0.330 2,4-Dinitrophenol 0.825 U 0.825 1,4-Dichlorobenzene 0.330 U 0.330 2,4-Dinitrophenol 0.825 U 0.825 1,4-Dichlorobenzene 0.330 U 0.330 Dibenzofuran 0.330 U 0.330 1,2-Dichlorobenzene 0.330 U 0.330 Dibenzofuran 0.330 U 0.330 2-Methylphenol 0.330 U 0.330 Dichylphthalate 0.330 U 0.330 0.3	Phenol	0.33	ט כ	0.330	•			
1,3-Dichlorobenzene 0.330 U 0.330 2,4-Dinitrophenol 0.825 U 0.825 1,4-Dichlorobenzene 0.330 U 0.330 4-Nitrophenol 0.825 U 0.825 Benzyl alcohol 0.330 U 0.330 Dibenzofuran 0.330 U 0.330 1,2-Dichlorobenzene 0.330 U 0.330 Z,4-Dinitrotoluene 0.330 U 0.330 2-Methylphenol 0.330 U 0.330 A-Chlorophenyl-phenylether 0.330 U 0.330 1,4-Piphenol 0.330 U 0.330 A-Chlorophenyl-phenylether 0.330 U 0.330 1,4-Piphenol 0.330 U 0.330 Hourene 0.330 U 0.330 1,4-Piphenol 0.330 U 0.330 Hevachloroethane 0.825 U 0.825 Nitrobenzene 0.330 U 0.330 Hevachloroethane 0.330 U 0.330 Hevachloroethane 0.330 U 0.330 1sophorone 0.330 U 0.330 Hevachloroethane 0.330 U 0.330 2-Nitrophenol 0.330 U 0.330 Hevachloroethene 0.330 U 0.330 2-Nitrophenol 0.330 U 0.330 <t< td=""><td>bis(2-Chloroethyl)ether</td><td>0.33</td><td>ט כ</td><td>0.330</td><td>3-Nitroaniline</td><td></td><td></td><td></td></t<>	bis(2-Chloroethyl)ether	0.33	ט כ	0.330	3-Nitroaniline			
1,4-Dichlorobenzene	2-Chlorophenol	0.33	ט כ	0.330	Acenaphthene			
Benzyl alcohol 0.330	1,3-Dichlorobenzene	0.33	ט כ	0.330	2,4-Dinitrophenol			
1,2-Dichlorobenzene	1,4-Dichlorobenzene	0.33	ט כ	0.330	4-Nitrophenol			
2-Methylphenol 0.330 U 0.330 Hornathine 0.330 U 0.330	Benzyl alcohol	0.33	ט כ	0.330	Dibenzofuran			
:(2-Chloroisopropyl)ether 0.330 U 0.330 4-Chlorophenyl-phenylether 0.330 U 0.330 .dethylphenol 0.330 U 0.330 Fluorene 0.330 U 0.330 N-Nitroso-di-n-propylamine 0.330 U 0.330 4-Nitroaniline 0.825 U 0.825 Hexachloroethane 0.330 U 0.330 4-Nitroaniline 0.825 U 0.825 Mitrobenzene 0.330 U 0.330 N-Nitrosodiphenylamine 0.330 U 0.330 Isophorone 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 2-Nitrophenol 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 2-Nitrophenol 0.330 U 0.330 Pentachlorophenzene 0.330 U 0.330 Benzoic Acid 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Pentachlorophenol 0.330 U 0.330 3.6 (2-tho	1,2-Dichlorobenzene	0.33	ט כ	0.330	2,4-Dinitrotoluene	0.330		
New Color New	2-Methylphenol	0.33	ט כ	0.330	Diethylphthalate	0.330		
N-Nitroso-di-n-propylamine 0.330 U 0.330 4-Nitroaniline 0.825 U 0.825 Hexachloroethane 0.330 U 0.330 4,6-Dinitro-2-methylphenol 0.825 U 0.825 Nitrobenzene 0.330 U 0.330 N-Nitrosodiphenylamine (1) 0.330 U 0.330 Isophorone 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 Di-n-outylphthalate 0.330 U 0.330 U 0.330 U 0.330 Phenanthrene 0.330 U 0.330 Di-n-outylphthalate 0.330 U 0.330 U 0.330 U 0.330 U 0.330 Di-n-outylphthalate 0.330 U	(2-Chloroisopropyl)ether	0.33	ט כ	0.330	4-Chlorophenyl-phenylether	. 0.330		
Hexachloroethane 0.330 U 0.330 4,6-Dinitro-2-methylphenol 0.825 U 0.825 Nitrobenzene 0.330 U 0.330 N-Nitrosodiphenylamine (1) 0.330 U 0.330 Isophorone 0.330 U 0.330 4-Bromophenyl-phenylether 0.330 U 0.330 2-Nitrophenol 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 2,4-Dimethylphenol 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 bis(2-Chloroethoxy)methane 0.330 U 0.330 Phenanthrene 0.330 U 0.330 2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.330 1,2,4-Trichlorobenzene 0.330 U 0.330 Pyrene 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330	. Aethylphenol	0.33	ט כ	0.330	Fluorene	0.330	σ	0.330
Nitrobenzene 0.330 U 0.330 N-Nitrosodiphenylamine (1) 0.330 U 0.330 Isophorone 0.330 U 0.330 4-Bromophenyl-phenylether 0.330 U 0.330 2-Nitrophenol 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 2,4-Dimethylphenol 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 2,4-Dichloroethoxy)methane 0.330 U 0.330 Anthracene 0.330 U 0.330 2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.330 1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Pyrene 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330	N-Nitroso-di-n-propylamine	0.33	ט כ	0.330	4-Nitroaniline	0.825	_	
Isophorone 0.330 U 0.330 4-Bromophenyl-phenylether 0.330 U 0.330 2-Nitrophenol 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 2,4-Dimethylphenol 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 bis(2-Chloroethoxy)methane 0.330 U 0.330 Anthracene 0.330 U 0.330 2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.330 1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Pyrene 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 2,4,6-Trich	Hexachloroethane	0.33	ט ס	0.330	4,6-Dinitro-2-methylphenol			
2-Nitrophenol 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330	Nitrobenzene	0.33	0 U	0.330	N-Nitrosodiphenylamine (1)	,		
2,4-Dimethylphenol 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 bis (2-Chloroethoxy)methane 0.330 U 0.330 Anthracene 0.330 U 0.330 2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.330 1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Pyrene 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 Di-n-octylphthalate 0.330 U 0.330 2,4,6-Trichlorophenol 0.825 U 0.825 Benzo(b)fluoranthene 0.330 U 0.330 2-Chloronaphthalene 0.330 U 0.330 Benzo(a)pyrene 0.330	Isophorone	0.33	ט ס	0.330	4-Bromophenyl-phenylether	0.330		
Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.336 bis(2-Chloroethoxy)methane 0.330 U 0.330 Anthracene 0.330 U 0.336 2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.336 1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330 U 0.336 Naphthalene 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.336 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.336 4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.336 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.336 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.336 2,4,6-Trichlorophenol 0.330 U 0.330 Di-n-octylphthalate 0.12 JB 0.336 2-Chloronaphthalene 0.330 U 0.330 Benzo(b)fluoranthene 0.330 U 0.336 <td>2-Nitrophenol</td> <td>0.33</td> <td>υ 0</td> <td>0.330</td> <td>Hexachlorobenzene</td> <td>0.330</td> <td>ס ס</td> <td>0.330</td>	2-Nitrophenol	0.33	υ 0	0.330	Hexachlorobenzene	0.330	ס ס	0.330
bis(2-Chloroethoxy)methane 0.330 U 0.330 Anthracene 0.330 U 0.330 2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.330 1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Pyrene 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330 2,4,6-Trichlorophenol 0.330 U 0.330 Di-n-octylphthalate 0.12 JB 0.330 2,4,5-Trichlorophenol 0.825 U 0.825 Benzo(b)fluoranthene 0.330 U 0.330 2-Nitroaniline 0.825 U 0.825 Benzo(a)pyrene 0.330 U 0.330 </td <td>2,4-Dimethylphenol</td> <td>0.33</td> <td>ט ס</td> <td>0.330</td> <td>Pentachlorophenol</td> <td>0.82</td> <td>5 U</td> <td>0.825</td>	2,4-Dimethylphenol	0.33	ט ס	0.330	Pentachlorophenol	0.82	5 U	0.825
2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.330 1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Pyrene 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 Hexachlorobutadiene 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330 2,4,6-Trichlorophenol 0.330 U 0.330 Di-n-octylphthalate 0.12 JB 0.330 2,4,5-Trichlorophenol 0.825 U 0.825 Benzo(b)fluoranthene 0.330 U 0.330 2-Chloronaphthalene 0.330 U 0.330 Benzo(a)pyrene 0.330 U 0.330 2-Nitroaniline 0.825 U 0.825 Benzo(a)pyrene 0.330 U 0.330 Dimethylphthalate 0.30 U 0.330 Dibenzo(a,h)anthracene	Benzoic Acid	0.33	υ 0	0.330	Phenanthrene	0.330		
1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Pyrene 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 Hexachlorobutadiene 0.330 U 0.330 Benzo(a) anthracene 0.330 U 0.330 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330 2,4,6-Trichlorophenol 0.330 U 0.330 Di-n-octylphthalate 0.330 U 0.330 2,4,5-Trichlorophenol 0.825 U 0.825 Benzo(b)fluoranthene 0.330 U 0.330 2-Chloronaphthalene 0.330 U 0.330 Benzo(k)fluoranthene 0.330 U 0.330 2-Nitroaniline 0.825 U 0.825 Benzo(a)pyrene 0.330 U 0.330 Dimethylphthalate 0.330 U 0.330 Indeno(1,2,3-cd)pyrene 0.330 U 0.330 Acenaphthylene 0.330 U 0.330 Dibenzo(a,h)anthracene<	bis(2-Chloroethoxy)methane	0.33	0 U	0.330	Anthracene	0.330		
Naphthalene 0.330 U 0.330 Pyrene 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 Hexachlorobutadiene 0.330 U 0.330 Benzo(a) anthracene 0.330 U 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Chrysene 0.330 U 0.330 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 Dis(2-Ethylhexyl)phthalate 0.330 U 0.330 2,4,6-Trichlorophenol 0.330 U 0.330 Di-n-octylphthalate 0.330 U 0.330 2,4,5-Trichlorophenol 0.825 U 0.825 Benzo(b)fluoranthene 0.330 U 0.330 2-Chloronaphthalene 0.330 U 0.330 Benzo(k)fluoranthene 0.330 U 0.330 2-Nitroaniline 0.825 U 0.825 Benzo(a)pyrene 0.330 U 0.330 Dimethylphthalate 0.330 U 0.330 Dibenzo(a,h)anthracene 0.330 U 0.330 <td>2,4-Dichlorophenol</td> <td>0.33</td> <td>Ū</td> <td>0.330</td> <td>Di-n-butylphthalate</td> <td>0.330</td> <td></td> <td></td>	2,4-Dichlorophenol	0.33	Ū	0.330	Di-n-butylphthalate	0.330		
4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.3	1,2,4-Trichlorobenzene	0.33	0 U	0.330	Fluoranthene	0.330		
Hexachlorobutadiene 0.330 U 0.330 3,3'-Dichlorobenzidine 0.330 U 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330 2,4,6-Trichlorophenol 0.330 U 0.330 Di-n-octylphthalate 0.12 JB 0.330 2,4,5-Trichlorophenol 0.825 U 0.825 Benzo(b)fluoranthene 0.330 U 0.330 2-Chloronaphthalene 0.330 U 0.330 Benzo(k)fluoranthene 0.330 U 0.330 2-Nitroaniline 0.825 U 0.825 Benzo(a)pyrene 0.330 U 0.330 Dimethylphthalate 0.330 U 0.330 Indeno(1,2,3-cd)pyrene 0.330 U 0.330 Acenaphthylene 0.330 U 0.330 Dibenzo(a,h)anthracene 0.330 U 0.330	Naphthalene	0.33	0 U	0.330	Pyrene	0.330		
4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330 2,4,6-Trichlorophenol 0.330 U 0.330 Di-n-octylphthalate 0.12 JB 0.330 2,4,5-Trichlorophenol 0.825 U 0.825 Benzo(b)fluoranthene 0.330 U 0.330 2-Chloronaphthalene 0.330 U 0.330 Benzo(k)fluoranthene 0.330 U 0.330 2-Nitroaniline 0.825 U 0.825 Benzo(a)pyrene 0.330 U 0.330 Dimethylphthalate 0.330 U 0.330 Indeno(1,2,3-cd)pyrene 0.330 U 0.330 Acenaphthylene 0.330 U 0.330 Dibenzo(a,h)anthracene 0.330 U 0.330	4-Chloroaniline	0.33	0 U	0.330	Butylbenzylphthalate	0.330		
2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330 2,4,6-Trichlorophenol 0.330 U 0.330 Di-n-octylphthalate 0.12 JB 0.330 2,4,5-Trichlorophenol 0.825 U 0.825 Benzo(b)fluoranthene 0.330 U 0.330 2-Chloronaphthalene 0.330 U 0.330 Benzo(k)fluoranthene 0.330 U 0.330 2-Nitroaniline 0.825 U 0.825 Benzo(a)pyrene 0.330 U 0.330 Dimethylphthalate 0.330 U 0.330 Indeno(1,2,3-cd)pyrene 0.330 U 0.330 Acenaphthylene 0.330 U 0.330 Dibenzo(a,h)anthracene 0.330 U 0.330	Hexachlorobutadiene	0.33	0 U	0.330	3,3'-Dichlorobenzidine	0.330		
Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330 2,4,6-Trichlorophenol 0.330 U 0.330 Di-n-octylphthalate 0.12 JB 0.330 2,4,5-Trichlorophenol 0.825 U 0.825 Benzo(b)fluoranthene 0.330 U 0.330 2-Chloronaphthalene 0.330 U 0.330 Benzo(k)fluoranthene 0.330 U 0.330 2-Nitroaniline 0.825 U 0.825 Benzo(a)pyrene 0.330 U 0.330 Dimethylphthalate 0.330 U 0.330 Indeno(1,2,3-cd)pyrene 0.330 U 0.330 Acenaphthylene 0.330 U 0.330 Dibenzo(a,h)anthracene 0.330 U 0.330	4-Chloro-3-methylphenol	0.33	0 U	0.330	Benzo(a)anthracene	0.330		
2,4,6-Trichlorophenol 0.330 U 0.330 Di-n-octylphthalate 0.12 JB 0.330 2,4,5-Trichlorophenol 0.825 U 0.825 Benzo(b)fluoranthene 0.330 U 0.330 2-Chloronaphthalene 0.330 U 0.330 Benzo(k)fluoranthene 0.330 U 0.330 2-Nitroaniline 0.825 U 0.825 Benzo(a)pyrene 0.330 U 0.330 Dimethylphthalate 0.330 U 0.330 Indeno(1,2,3-cd)pyrene 0.330 U 0.330 Acenaphthylene 0.330 U 0.330 Dibenzo(a,h)anthracene 0.330 U 0.330	2-Methylnaphthalene	0.33	0 U	0.330	Chrysene	0.330		
2,4,5-Trichlorophenol 0.825 U 0.825 Benzo(b)fluoranthene 0.330 U 0.330 2-Chloronaphthalene 0.330 U 0.330 Benzo(k)fluoranthene 0.330 U 0.330 2-Nitroaniline 0.825 U 0.825 Benzo(a)pyrene 0.330 U 0.330 Dimethylphthalate 0.330 U 0.330 Indeno(1,2,3-cd)pyrene 0.330 U 0.330 Acenaphthylene 0.330 U 0.330 Dibenzo(a,h)anthracene 0.330 U 0.330	Hexachlorocyclopentadiene	0.33	0 ប	0.330	bis(2-Ethylhexyl)phthalate	e 0.330		
2-Chloronaphthalene 0.330 U 0.330 Benzo(k)fluoranthene 0.330 U 0.330 2-Nitroaniline 0.825 U 0.825 Benzo(a)pyrene 0.330 U 0.330 Dimethylphthalate 0.330 U 0.330 Indeno(1,2,3-cd)pyrene 0.330 U 0.330 Acenaphthylene 0.330 U 0.330 Dibenzo(a,h)anthracene 0.330 U 0.330	2,4,6-Trichlorophenol	0.33	0 U	0.330	Di-n-octylphthalate	0.13	2 JB	0.330
2-Nitroaniline 0.825 U 0.825 Benzo(a)pyrene 0.330 U 0.330 Dimethylphthalate 0.330 U 0.330 Indeno(1,2,3-cd)pyrene 0.330 U 0.330 Acenaphthylene 0.330 U 0.330 Dibenzo(a,h)anthracene 0.330 U 0.330	2,4,5-Trichlorophenol	0.82	5 U	0.825	Benzo(b)fluoranthene	0.330	ט כ	0.330
Dimethylphthalate 0.330 U 0.330 Indeno(1,2,3-cd)pyrene 0.330 U 0.330 Acenaphthylene 0.330 U 0.330 Dibenzo(a,h)anthracene 0.330 U 0.330	2-Chloronaphthalene	0.33	0 ប	0.330	Benzo(k)fluoranthene	0.330		
Acenaphthylene 0.330 U 0.330 Dibenzo(a,h)anthracene 0.330 U 0.330	2-Nitroaniline	0.82	5 U	0.825	Benzo(a)pyrene	0.330		
Acenaphthylene 0.330 U 0.330 Dibenzo(a,h)anthracene 0.330 U 0.330	Dimethylphthalate	0.33	0 U	0.330	Indeno(1,2,3-cd)pyrene	0.330		
Benzo(g,h,i)perylene 0.330 U 0.330	Acenaphthylene	0.33	0 U	0.330	Dibenzo(a,h)anthracene	0.330		
					Benzo(g,h,i)perylene	0.33	ם כ	0.330

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1015

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	75	23 - 120				
2-Fluorobiphenyl	80	30 - 115				
Terphenyl-D14	87	18 - 137				
Phenol-D5	66	24 - 113				
2-Fluorophenol	64	25 - 121				
2.4.6-Tribromophenol	73	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01

(512) 892-6684 Work Order: B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1015

SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 95.2380

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.97	UN	0.97	7060	11/09/93
Aluminum	9500	N*	19	6010	11/23/93
Barium	430	N*	19	6010	11/23/93
Beryllium	0.87		0.48	6010	11/23/93
Cadmium	0.48	U	0.48	6010	11/23/93
Chromium	13		0.95	6010	11/23/93
Copper	6.7		2.4	6010	11/23/93
Iron	10000	N*	9.5	6010	11/23/93
Nickel	12	N	3.8	6010	11/23/93
Lead	5.9	N	0.29	7421	11/09/93
Mercury	0.023	บ	0.023	7471	11/06/93
Silver	0.95	U	0.95	6010	11/23/93
Zinc	18		1.9	6010	11/23/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

SAMPLE ID: A1016

SAMPLE DATE: 10/21/93 08:25:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method	
Test Name	Ref	Result	Limit	Units	 Analyzed	Reference	_
Chromium VI		0.100	0.10	MG/KG	11/02/93	EPA7196	

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1016 SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 11/03/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

ONITS. CO/NO		F	Reporting				Re	porti
	Result		-		Result	Qual	L	Limit
Chloromethane	1	0 t	J 10	1,2-Dichloropropane		5	U	5
Bromomethane	1	0 τ	J 10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	ì	0 0	J 10	Trichloroethene		5	U	5
Chloroethane	1	0 0	J 10	Chlorodibromomethane		5	U	5
Methylene chloride	6.	9 3	10	1,1,2-Trichloroethane		5	U	5
Acetone	8.	6 3	100	Benzene		5	U	5
Carbon disulfide		5 t	J 5	cis-1,3-Dichloropropene		5	U	5
1 1-Dichloroethene		5 t	J 5	2-Chloroethylvinyl ether		10	U	10
-Dichloroethane		5 (J 5	Bromoform		5	U	5
th ans-1,2-Dichloroethene		5 t	J 5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene		5 t	J 5	4-Methyl-2-pentanone	!	50	U	50
Chloroform		5 t	J 5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5 t	J 5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	3.	8 JI	3 100	Toluene		5	U	5
1,1,1-Trichloroethane		5 t	J 5	Chlorobenzene		5	U	5
Carbon tetrachloride		5 T	J 5	Ethylbenzene		5	U	5
Vinyl acetate	1	.0 1	J 10	Styrene		5	U	5
Dichlorobromomethane		5 1	5	Xylenes, total		5	U	5

Surrogates	<pre>% Recovery</pre>	Limits				
TOLUENE-D8	101	81 - 117				
BROMOFLUOROBENZENE	99	74 - 121				
1,2-DICHLOROETHANE-D4	107	70 - 120				

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1016

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 10/29/93
ANALYSIS DATE: 11/08/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	porting			F	Report
Re	sult	Qual	Limit		Result	Qual	Limi
Phenol	0.330		0.330	2,6-Dinitrotoluene	0.33	-	0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.82	_	0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.33		0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.82		0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.82		0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.33	-	0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.33		0.330
^o -Methylphenol	0.330		0.330	Diethylphthalate	0.33		0.330
<pre>s(2-Chloroisopropyl)ether</pre>	0.330		0.330	4-Chlorophenyl-phenylether			0.330
Methylphenol	0.330	U	0.330	Fluorene	0.33		0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.82		0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol		_	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)			0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.33		0.330
2-Nitrophenol	0.330	Ū	0.330	Hexachlorobenzene	0.33	-	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.82		0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.33		0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.33		0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.33		0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.33		0.330
Naphthalene	0.330	U	0.330	Pyrene	0.33	-	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.33		0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.33		0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.33		0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.33		0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate			0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.08	-	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.33		0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.33		0.330
2-Nitroaniline	0.825	ט	0.825	Benzo(a)pyrene	0.33		0.330
Dimethylphthalate	0.330	ט	0.330	<pre>Indeno(1,2,3-cd)pyrene</pre>	0.33		0.330
Acenaphthylene	0.330	ט	0.330	Dibenzo(a,h)anthracene	0.33		0.33(
				Benzo(g,h,i)perylene	0.33	ο σ	0.33(

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1016

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	71	23 - 120
2-Fluorobiphenyl	80	30 - 115
Terphenyl-D14	84	18 - 137
Phenol-D5	61	24 - 113
2-Fluorophenol	51	25 - 121
2.4.6-Tribromophenol	92	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1016

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 116.279

UNITS: MG/KG

						_
	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date	_
Arsenic	0.97	UN	0.97	7060	11/09/93	
Aluminum	6200	N*	23.	6010	11/23/93	
Barium	850	N*	23	6010	11/23/93	
Beryllium	0.61		0.58	6010	11/23/93	
Cadmium	0.58	U	0.58	6010	11/23/93	
Chromium	9.8		1.2	6010	11/23/93	
Copper	5.3		2.9	6010	11/23/93	
Iron	9200	N*	12	6010	11/23/93	
Nickel	10	N	4.7	6010	11/23/93	
Lead	6.0	N	0.29	7421	11/09/93	
Mercury	0.022	บ	0.022	7471	11/06/93	
Silver	1.2	U	1.2	6010	11/23/93	
Zinc	12		2.3	6010	11/23/93	

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01⁽⁵¹²⁾892-6684 Work Order: B3-10-300

SAMPLE ID: A1017

SAMPLE DATE: 10/21/93 14:10:00

SAMPLE MATRIX: SOIL

	Note	Reporting				Date	Method
Test Name	Ref	Result	<u>Limit</u>	Units		Analyzed	Reference
Chromium VI		0.100	0.10	MG/KG		11/02/93	EPA7196

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1017

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/03/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

oniio. ooy no			Reportin	na .			Re	porti
	Result		_	-5	Result	Qua]	L	Limit
Chloromethane	1	.0	U 10	1,2-Dichloropropane		5	U	5
Bromomethane	1	.0	U 10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	1	.0	U 10	Trichloroethene		5	U	5
Chloroethane	1	.0	U 10	Chlorodibromomethane		5	U	5
Methylene chloride	7.	0	J 10	1,1,2-Trichloroethane		5	U	5
Acetone	6.	9	J 100	Benzene		5	U	5
Carbon disulfide		5	U 5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5	υ 5	2-Chloroethylvinyl ether		10	U	10
-Dichloroethane	3.	. 7	J 5	Bromoform		5	U	5
ans-1,2-Dichloroethene		5	T 5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene		5	T 5	4-Methyl-2-pentanone	!	50	U	50
Chloroform		5	U 5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5	U 5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	3	L3 J	B 100	Toluene		5	U	5
1,1,1-Trichloroethane		5	U 5	Chlorobenzene	2	.3	J	5
Carbon tetrachloride		5	U 5	Ethylbenzene		5	U	5
Vinyl acetate	:	LO	U 10	Styrene		5	U	5
Dichlorobromomethane		5	บ 5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits				
TOLUENE-D8	104	81 - 117				
BROMOFLUOROBENZENE	94	74 - 121				
1,2-DICHLOROETHANE-D4	102	70 - 120				

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 802-6684: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1017 SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 10/29/93
ANALYSIS DATE: 11/02/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting				Reporti
•	esult		Limit		Result	Qual	Limit
Phenol	0.330	υ (0.330	2,6-Dinitrotoluene	0.33	-	0.330
bis(2-Chloroethyl)ether	0.330	ט כ	0.330	3-Nitroaniline	0.82	-	0.825
2-Chlorophenol	0.330	ט כ	0.330	Acenaphthene	0.33	-	0.330
1,3-Dichlorobenzene	0.330	ט כ	0.330	2,4-Dinitrophenol	0.82		0.825
1,4-Dichlorobenzene	0.330	ט כ	0.330	4-Nitrophenol	0.82		0.825
Benzyl alcohol	0.330	ט כ	0.330	Dibenzofuran	0.33		0.330
1,2-Dichlorobenzene	0.330	ט כ	0.330	2,4-Dinitrotoluene	0.33		0.330
2-Methylphenol	0.330	ט כ	0.330	Diethylphthalate	0.33		0.330
(2-Chloroisopropyl)ether	0.330	ט כ	0.330	4-Chlorophenyl-phenylether		_	0.330
Aethylphenol	0.330	ט כ	0.330	Fluorene	0.33		0.330
N-Nitroso-di-n-propylamine	0.330	ט כ	0.330	4-Nitroaniline	0.82	_	0.825
Hexachloroethane	0.330		0.330	4,6-Dinitro-2-methylphenol		_	0.825
Nitrobenzene	0.330	ט כ	0.330	N-Nitrosodiphenylamine (1)			0.330
Isophorone	0.330	ט כ	0.330	4-Bromophenyl-phenylether	0.33		0.330
2-Nitrophenol	0.330	ט כ	0.330	Hexachlorobenzene	0.33		0.330
2,4-Dimethylphenol	0.330		0.330	Pentachlorophenol	0.82		0.825
Benzoic Acid	0.330	ט כ	0.330	Phenanthrene	0.33		0.330
bis(2-Chloroethoxy)methane	0.330	ט כ	0.330	Anthracene	0.33		0.330
2,4-Dichlorophenol	0.330	ט כ	0.330	Di-n-butylphthalate	0.33		0.330
1,2,4-Trichlorobenzene	0.330	ט ס	0.330	Fluoranthene	0.33		0.330
Naphthalene	0.33	ט ס	0.330	Pyrene	0.33	-	0.330
4-Chloroaniline	0.33	0 U	0.330	Butylbenzylphthalate	0.33		0.330
Hexachlorobutadiene	0.33	0 U	0.330	3,3'-Dichlorobenzidine	0.33		0.330
4-Chloro-3-methylphenol	0.33	0 U	0.330	Benzo(a)anthracene	0.33		0.330
2-Methylnaphthalene	0.33	0 U	0.330	Chrysene	0.33		0.330
Hexachlorocyclopentadiene	0.33	0 U	0.330	bis(2-Ethylhexyl)phthalate	e 0.33		0.330
2,4,6-Trichlorophenol	0.33	0 U	0.330	Di-n-octylphthalate	0.2		0.330
2,4,5-Trichlorophenol	0.82	5 U	0.825	Benzo(b)fluoranthene	0.33		0.330
2-Chloronaphthalene	0.33	0 U	0.330	Benzo(k) fluoranthene	0.33		0.330
2-Nitroaniline	0.82		0.825	Benzo(a)pyrene	0.33	_	0.330
Dimethylphthalate	0.33	0 υ	0.330	Indeno(1,2,3-cd)pyrene	0.33	_	0.330
Acenaphthylene	0.33		0.330	Dibenzo(a,h)anthracene	0.33		0.330
				Benzo(g,h,i)perylene	0.33	0 U	0.330

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1017

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	79	23 - 120
2-Fluorobiphenyl	81	30 - 115
Terphenyl-D14	89	18 - 137
Phenol-D5	69	24 - 113
2-Fluorophenol	68	25 - 121
2.4.6-Tribromorhenol	81	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1017 SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 116.279

UNITS: MG/KG

Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
3.8	N	1.0	7060	11/09/93
13000	N*	23	6010	11/23/93
83	N*	23	6010	11/23/93
1.1		0.58	6010	11/23/93
0.58	U	0.58	6010	11/23/93
12		1.2	6010	11/23/93
7.6		2.9	6010	11/23/93
12000	N*	12	6010	11/23/93
10	N	4.7	6010	11/23/93
9.5	N	1.2	7421	11/09/93
0.023	U	0.023	7471	11/06/93
1.2	U	1.2	6010	11/23/93
20		2.3	6010	11/23/93
	3.8 13000 83 1.1 0.58 12 7.6 12000 10 9.5 0.023 1.2	Result Qual 3.8 N 13000 N* 83 N* 1.1 0.58 U 12 7.6 12000 N* 10 N 9.5 N 0.023 U 1.2 U	Result Qual Limit 3.8 N 1.0 13000 N* 23 83 N* 23 1.1 0.58 0.58 U 0.58 12 1.2 7.6 2.9 12000 N* 12 10 N 4.7 9.5 N 1.2 0.023 U 0.023 1.2 U 1.2	Result Qual Limit Reference 3.8 N 1.0 7060 13000 N* 23 6010 83 N* 23 6010 1.1 0.58 6010 0.58 U 0.58 6010 12 1.2 6010 7.6 2.9 6010 12000 N* 12 6010 10 N 4.7 6010 9.5 N 1.2 7421 0.023 U 0.023 7471 1.2 U 1.2 6010

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

SAMPLE ID: A1018

SAMPLE DATE: 10/21/93 14:15:00

SAMPLE MATRIX: WATER

	Note	Reporting			Date	Method
Test Name	Ref	Result	Limit	Units		Reference
TPH - IR		1.00	1.0	MG/L	11/05/93	EPA418_1

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1018
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 10/31/93
DILUTION FACTOR: 1.0

UNITS: UG/L

	Reporting		Reporting				Repor	
	Result	Qual	Limit		Result	Qua.	1	Limit
Chloromethane	1	0 t	J 10	1,2-Dichloropropane		5	U	5
Bromomethane	1	0 (10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	1	ο τ	J 10	Trichloroethene		5	U	5
Chloroethane	1	0 τ	J 10	Chlorodibromomethane	9.	.3		5
Methylene chloride	7.	7 JI	3 10	1,1,2-Trichloroethane		5	U	5
Acetone	10	0 t	100	Benzene		5	U	5
Carbon disulfide		5 t	J 5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5 t	5	2-Chloroethylvinyl ether	;	10	U	10
'-Dichloroethane		5 t	J 5	Bromoform	2	.6	J	5
ans-1,2-Dichloroethene		5 t	J 5	2-Hexanone	!	50	Ū	50
cis-1,2-Dichloroethene		5 t	J 5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	3.	2 3	J 5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5 t	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	Ο τ	J 100	Toluene		5	U	5
1,1,1-Trichloroethane		5 t	J 5	Chlorobenzene		5	U	5
Carbon tetrachloride		5 t	J 5	Ethylbenzene		5	U	5
Vinyl acetate	1	.Ο τ	J 10	Styrene		5	U	5
Dichlorobromomethane	6.	6	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits			
TOLUENE-D8	93	88 - 110			
BROMOFLUOROBENZENE	97	74 - 121			
1,2-DICHLOROETHANE-D4	101	70 - 120			

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6484: B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1018
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: WATER

DILUTION FACTOR (6010): 1.00000

UNITS: MG/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	U	0.010	7060	11/12/93
Aluminum	0.20	U	0.20	6010	11/16/93
Barium	0.20	บ	0.20	6010	11/16/93
Beryllium	0.0050	บ	0.0050	6010	11/16/93
Cadmium	0.0050	U	0.0050	6010	11/16/93
Chromium	0.091		0.010	6010	11/16/93
Copper	0.025	Ŭ	0.025	6010	11/16/93
Iron	2.1		0.10	6010	11/16/93
Nickel	0.040	ប	0.040	6010	11/16/93
Lead	0.0077		0.0030	7421	11/11/93
Mercury	0.00020	υ	0.00020	7471	11/08/93
Silver	0.010	U	0.010	6010	11/16/93
Zinc	0.020	U	0.020	6010	11/16/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

SAMPLE ID: A1019

SAMPLE DATE: 10/21/93 14:20:00

	Note		Reporting		Date	Method
Test Name	<u>Ref</u>	Result	<u>Limit</u>	Units	Analyzed	Reference
Chromium VI		0.100	0.10	MG/KG	11/02/93	EPA7196

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1019
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/03/93

DILUTION FACTOR: 1.0

UNITS: UG/KG

•		R	eporting				Rej	porti
	Result (Qual	Limit		Result	Qua]	LI	Limit
Chloromethane	10	ט כ	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	ט כ	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	ט כ	10	Trichloroethene		5	U	5
Chloroethane	10	ט כ	10	Chlorodibromomethane		5	U	5
Methylene chloride	4.8	3 J	10	1,1,2-Trichloroethane		5	U	5
Acetone	8.9	J	100	Benzene		5	U	5
Carbon disulfide	į	5 U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	Ę	5 U	5	2-Chloroethylvinyl ether	:	10	U	10
l-Dichloroethane	į	5 U	5	Bromoform		5	U	5
ans-1,2-Dichloroethene	į	5 U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	į	5 U	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	į	5 U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	;	5 U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	4.0) JB	100	Toluene		5	U	5
1,1,1-Trichloroethane	9	5 U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	ţ	5 U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	ט כ	10	Styrene		5	U	5
Dichlorobromomethane		5 U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	102	81 - 117
BROMOFLUOROBENZENE	99	74 - 121
1,2-DICHLOROETHANE-D4	106	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES
AUSTIN, TX

409832-003-01 (512),892-6684 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1019
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 10/29/93
ANALYSIS DATE: 11/02/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	porting			1	Report
R	esult	Qual	Limit		Result	Qual	Limi
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330		0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.825		0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	-	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825		0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	_	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330		0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	_	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330		0.330
3(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether			0.330
Methylphenol	0.330	U	0.330	Fluorene	0.330		0.330
N-Nitroso-di-n-propylamine	0.330	U C	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U C	0.330	4,6-Dinitro-2-methylphenol		_	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)			0.330
Isophorone	0.330	ט כ	0.330	4-Bromophenyl-phenylether	0.330	_	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330		0.330
2,4-Dimethylphenol	0.330	ט כ	0.330	Pentachlorophenol	0.825		0.82!
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330		0.330
bis(2-Chloroethoxy)methane	0.330	ט כ	0.330	Anthracene	0.330		0.33
2,4-Dichlorophenol	0.33	ט כ	0.330	Di-n-butylphthalate	0.330		0.33
1,2,4-Trichlorobenzene	0.33	ט כ	0.330	Fluoranthene	0.330		0.331
Naphthalene	0.33	ט כ	0.330	Pyrene	0.330		0.33
4-Chloroaniline	0.330	ט כ	0.330	Butylbenzylphthalate	0.330		0.33(
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U (0.33(
4-Chloro-3-methylphenol	0.330	ט כ	0.330	Benzo(a)anthracene	0.330	U	0.33(
2-Methylnaphthalene	0.33	U	0.330	Chrysene	0.330	U (0.33(
Hexachlorocyclopentadiene	0.330	ט כ	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.33
2,4,6-Trichlorophenol	0.330	ט כ	0.330	Di-n-octylphthalate	0.13	JB	0.33
2,4,5-Trichlorophenol	0.82	5 U	0.825	Benzo(b)fluoranthene	0.330	ט ט	0.33
2-Chloronaphthalene	0.33	ט כ	0.330	Benzo(k)fluoranthene	0.330	U	0.33
2-Nitroaniline	0.82	5 U	0.825	Benzo(a)pyrene	0.330	U	0.33
Dimethylphthalate	0.33	ט כ	0.330	Indeno(1,2,3-cd)pyrene	0.330	U (0.33
Acenaphthylene	0.33	ט כ	0.330	Dibenzo(a,h)anthracene	0.330	U	0.33
				Benzo(g,h,i)perylene	0.330	U (0.33

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1019

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits		
Nitrobenzene-D5	75	23 - 120		
2-Fluorobiphenyl	79	30 - 115		
Terphenyl-D14	83	18 - 137		
Phenol-D5	65	24 - 113		
2-Fluorophenol	63	25 - 121		
2.4.6-Tribromophenol	76	19 - 122		

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{\mathtt{B}}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1019

SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 117.647

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	7.8	N	1.2	7060	11/09/93
Aluminum	7400	N*	24	6010	11/23/93
Barium	3400	N*	24	6010	11/23/93
Beryllium	1.1		0.59	6010	11/23/93
Cadmium	0.85		0.59	6010	11/23/93
Chromium	11		1.2	6010	11/23/93
Copper	14		2.9	6010	11/23/93
Iron	16000	N*	12	6010	11/23/93
Nickel	34	N	4.7	6010	11/23/93
Lead	18	N	1.4	7421	11/09/93
Mercury	0.024	U	0.024	7471	11/06/93
Silver	1.2	Ü	1.2	6010	11/23/93
Zinc	17		2.4	6010	11/23/93

Data qualifier key:

- E estimated value
- ${\tt M}$ duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Duplicate analysis outside control limits due to matrix interference on aluminum, barium and iron analysis by ICPES, affecting all soil samples in batch. LCS / LCSD results and method Quality Control were acceptable.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 802 01684: B3-10-300

SAMPLE ID: A1019-MS

SAMPLE DATE: 10/21/93 14:20:00

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		88		% REC	11/02/93	EPA7196

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684r: B3-10-300

TEST NAME: Bazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1019-MS
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

ANALYSIS DATE: 11/03/93
DILUTION FACTOR: 1.0

UNITS: % REC

Result			Result
1,1-Dichloroethene	95	Trichloroethene	81
•		Benzene	98
		Toluene	99
		Chlorobenzene	101

Surrogates	% Recovery	Limits
TOLUENE-D8	100	81 - 117
BROMOFLUOROBENZENE	96	74 - 121
1,2-DICHLOROETHANE-D4	108	70 - 120

Data Qualifier Key:

U - none detected

J - estimated value (less than the sample quantitation limit)

B - analyte is found in the associated blank as well as in the sample

'blank' - positive result

* - Surrogate recovery is outside QC limit

D - compound identified at a secondary dilution factor

E - concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892 6664: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1019-MS
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 10/29/93
ANALYSIS DATE: 11/02/93
DILUTION FACTOR: 0.033

UNITS: % REC

I	• •	Result	
Phenol	70	Acenaphthene	96
2-Chlorophenol	80	4-Nitrophenol	85
1,4-Dichlorobenzene	68	2,4-Dinitrotoluene	80
N-Nitroso-di-n-propylamine	86	Pentachlorophenol	79
1,2,4-Trichlorobenzene	82	Pyrene	92
4-Chloro-3-methylphenol	85	-	

Surrogates	% Recovery	Limits
Nitrobenzene-D5	77	23 - 120
2-Fluorobiphenyl	79	30 - 115
Terphenyl-D14	82	18 - 137
Phenol-D5	67	24 - 113
2-Fluorophenol	70	25 - 121
2,4,6-Tribromophenol	81	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1019-MS
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 88.4955

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	139			7060	11/09/93
Aluminum	973		18	6010	11/23/93
Barium	0		18	6010	11/23/93
Beryllium	85		0.44	6010	11/23/93
Cadmium	84		0.44	6010	11/23/93
Chromium	90		0.88	6010	11/23/93
Copper	. 82		2.2	6010	11/23/93
Iron	0		8.8	6010	11/23/93
Nickel	74		3.5	6010	11/23/93
Lead	0			7421	11/09/93
Mercury	104			7471	11/06/93
Silver	85		0.88	6010	11/23/93
Zinc	86		1.8	6010	11/23/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Matrix spike outside control limits due to matrix interference on aluminum, barium, iron and nickel analysis by ICPES, affecting all soil samples in batch. LCS / LCSD and method Quality Control were acceptable.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892 6484: B3-10-300

SAMPLE ID: A1019-MSD

SAMPLE DATE: 10/21/93 14:20:00

	Note		Reporting		Date	Method	
Test Name	Ref	Result	Limit	Units	Analyzed	Reference	
Chromium VI		94		% REC	11/02/93	EPA7196	

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1019-MSD
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/03/93
DILUTION FACTOR: 1.0

UNITS: % REC

	Result			Result
1,1-Dichloroethene	93	Trichloro	ethene	82
		Benzene	1	99
		Toluene		100
		Chloroben	zene	103
	Surrogates	% Recovery	Limits	
	TOLUENE-D8	102	81 - 117	
	BROMOFLUOROBENZENE	99	74 - 121	
	1,2-DICHLOROETHANE-D4	103	70 - 120	

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1019-MSD SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 10/29/93
ANALYSIS DATE: 11/02/93
DILUTION FACTOR: 0.033

UNITS: % REC

R		Result	
Phenol	74	Acenaphthene	95
2-Chlorophenol	84	4-Nitrophenol	77
1,4-Dichlorobenzene	72	2,4-Dinitrotoluene	79
N-Nitroso-di-n-propylamine	85	Pentachlorophenol	73
1,2,4-Trichlorobenzene	83	Pyrene	96
4-Chloro-3-methylphenol	86	-	

Surrogates	% Recovery	Limits			
Nitrobenzene-D5	73	23 - 120			
2-Fluorobiphenyl	76	30 - 115			
Terphenyl-D14	82	18 - 137			
Phenol-D5	68	24 - 113			
2-Fluorophenol	70	25 - 121			
2,4,6-Tribromophenol	75	19 - 122			

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 802 01684: B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1019-MSD SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 104.166

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	141			7060	11/09/93
Aluminum	808		21	6010	11/23/93
Barium	0		21	6010	11/23/93
Beryllium	85		0.52	6010	11/23/93
Cadmium	83		0.52	6010	11/23/93
Chromium	90		1.0	6010	11/23/93
Copper	82		2.6	6010	11/23/93
Iron	0		10	6010	11/23/93
Nickel	74		4.2	6010	11/23/93
Lead	0			7421	11/09/93
Mercury	107			7471	11/06/93
Silver	85		1.0	6010	11/23/93
Zinc	85		2.1	6010	11/23/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Matrix spike duplicate outside control limits due to matrix interference on aluminum, barium, iron and nickel analysis by ICPES, affecting all soil samples in batch. LCS / LCSD and method Quality Control were acceptable.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: вз-10-300

SAMPLE ID: A1020

SAMPLE DATE: 10/21/93 14:30:00

	Note	Reporting			Date Method	
Test Name	Ref	Result	<u>Limit</u>	Units	Analyzed Reference	ce
Chromium VI		0.100	0.10	MG/KG	11/03/93 EPA7196	

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684r: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1020
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/03/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		F	Reporting				Re	porti
	Result	Qual	Limit		Result	Qua	1	Limit
Chloromethane	1	LO t	10	1,2-Dichloropropane		5	U	į
Bromomethane	1	LO T	10	trans-1,3-Dichloropropene		5	U	į
Vinyl chloride	1	LO t	J 10	Trichloroethene		5	U	į
Chloroethane	1	LO T	10	Chlorodibromomethane		5	U	Ę
Methylene chloride	3.	.7 3	10	1,1,2-Trichloroethane		5	U	Ē
Acetone	6.	.1 3	100	Benzene		5	U	į
Carbon disulfide		5 t	5	cis-1,3-Dichloropropene		5	U	į
1,1-Dichloroethene		5 t	5	2-Chloroethylvinyl ether		10	U	1(
1-Dichloroethane	3.	4 3	r 5	Bromoform		5	U	į
_ans-1,2-Dichloroethene		5 t	5	2-Hexanone		50	U	5(
cis-1,2-Dichloroethene		5 t	5	4-Methyl-2-pentanone	5	50	U	5(
Chloroform		5 t	5	Tetrachloroethene		5	U	į
1,2-Dichloroethane		5 t	5	1,1,2,2-Tetrachloroethane		5	U	!
2-Butanone	10	00 t	100	Toluene		5	U	!
1,1,1-Trichloroethane		5 t	5	Chlorobenzene		5	U	!
Carbon tetrachloride		5 t	5	Ethylbenzene		5	U	!
Vinyl acetate		LO T	J 10	Styrene		5	U	
Dichlorobromomethane		5 t	5	Xylenes, total		5	U	

Surrogates	* Recovery	Limits
TOLUENE-D8	100	81 - 117
BROMOFLUOROBENZENE	97	74 - 121
1,2-DICHLOROETHANE-D4	104	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1020 SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 10/29/93
ANALYSIS DATE: 11/02/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			I	Reporti
R€	sult	Qual	Limit		Result	Qual	Limit
Phenol	0.330		0.330	2,6-Dinitrotoluene	0.330		0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.82		0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330		0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.82		0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.82		0.825
Benzyl alcohol	0.330	U (0.330	Dibenzofuran	0.330		0.330
1,2-Dichlorobenzene	0.330	ט כ	0.330	2,4-Dinitrotoluene	0.330		0.330
2-Methylphenol	0.330	ט (0.330	Diethylphthalate	0.330		0.330
(2-Chloroisopropyl)ether	0.330	ט כ	0.330	4-Chlorophenyl-phenylether			0.330
aethylphenol	0.330	U (0.330	Fluorene	0.330		0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.82		0.825
Hexachloroethane	0.330	ט כ	0.330	4,6-Dinitro-2-methylphenol			0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)			0.330
Isophorone	0.330	บ (0.330	4-Bromophenyl-phenylether	0.330		0.330
2-Nitrophenol	0.330	ט כ	0.330	Hexachlorobenzene	0.33		0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.82		0.825
Benzoic Acid	0.330	υ (0.330	Phenanthrene	0.33		0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.33		0.330
2,4-Dichlorophenol	0.330	ט כ	0.330	Di-n-butylphthalate	0.33		0.330
1,2,4-Trichlorobenzene	0.330	υ (0.330	Fluoranthene	0.330	ט כ	0.330
Naphthalene	0.330	ט כ	0.330	Pyrene	0.330	ט כ	0.330
4-Chloroaniline	0.330	υ (0.330	Butylbenzylphthalate	0.330	ט כ	0.330
Hexachlorobutadiene	0.330	ט כ	0.330	3,3'-Dichlorobenzidine	0.330	ט כ	0.330
4-Chloro-3-methylphenol	0.330	ט כ	0.330	Benzo(a)anthracene	0.330	ט כ	0.330
2-Methylnaphthalene	0.330	ט כ	0.330	Chrysene	0.330	ט כ	0.330
Hexachlorocyclopentadiene	0.330	ט כ	0.330	bis(2-Ethylhexyl)phthalate	0.330	ט כ	0.330
2,4,6-Trichlorophenol	0.330	ט כ	0.330	Di-n-octylphthalate	0.2) ЈВ	0.330
2,4,5-Trichlorophenol	0.825	5 U	0.825	Benzo(b)fluoranthene	0.33	ט כ	0.330
2-Chloronaphthalene	0.330	ט כ	0.330	Benzo(k)fluoranthene	0.33	ט כ	0.330
2-Nitroaniline	0.825	5 U	0.825	Benzo(a)pyrene	0.33	ט כ	0.330
Dimethylphthalate	0.330	ט כ	0.330	Indeno(1,2,3-cd)pyrene	0.33	ט כ	0.330
Acenaphthylene	0.330	ט כ	0.330	Dibenzo(a,h)anthracene	0.33		0.330
				Benzo(g,h,i)perylene	0.33	ט כ	0.330

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1020 SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

Surrogates .	% Recovery	Limits			
Nitrobenzene-D5	78	23 - 120			
2-Fluorobiphenyl	82	30 - 115			
Terphenyl-D14	83	18 - 137			
Phenol-D5	70	24 - 113			
2-Fluorophenol	71	25 - 121			
2,4,6-Tribromophenol	78	19 - 122			

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1020 SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 87.7192

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date	_
 Arsenic	2.0	N	1.1	7060	11/09/93	_
Aluminum	5200	N*	18	6010	11/23/93	
Barium	80	N*	18	6010	11/23/93	
Beryllium	0.58		0.44	6010	11/23/93	
Cadmium	0.44	U	0.44	6010	11/23/93	
Chromium	6.5		0.88	6010	11/23/93	
Copper	4.7		2.2	6010	11/23/93	
Iron	4700	N*	8.8	6010	11/23/93	
Nickel	9.4	N	3.5	6010	11/23/93	
Lead	5.8	N	0.32	7421	11/09/93	
Mercury	0.021	U	0.021	7471	11/06/93	
Silver	0.88	U	0.88	6010	11/23/93	
Zinc	13		1.8	6010	11/23/93	

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6484: B3-10-300

SAMPLE ID: A1021

SAMPLE DATE: 10/21/93 14:35:00

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	<u>Analyzed</u>	Reference
Chromium VI		0.100	0.10	MG/KG	11/03/93	EPA7196

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892 0684: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1021

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/03/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Re	portin
	Result Qua	al	Limit		Result	Qua	1	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	3.0	J	10	1,1,2-Trichloroethane		5	Ū	5
Acetone	7.2	J	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
-Dichloroethane	3.4	J	5	Bromoform		5	U	5
ans-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	4.2	JB	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	Ū	5
Dichlorobromomethane	5	U	5	Xvlenes, total		5	IJ	5

Surrogates	% Recovery	Limits					
TOLUENE-D8	98	81 - 117					
BROMOFLUOROBENZENE	96	74 - 121					
1,2-DICHLOROETHANE-D4	103	70 - 120					

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892 6684: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1021 SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 10/29/93
ANALYSIS DATE: 11/02/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			1	Reporti
Re	sult	Qual	Limit		Result	Qual	Limit
Phenol	0.330		0.330	2,6-Dinitrotoluene	0.330	-	0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.82		0.825
2-Chlorophenol	0.330	_	0.330	Acenaphthene	0.330		0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.82		0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.82		0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.330	-	0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.330		0.330
2-Methylphenol	0.330		0.330	Diethylphthalate	0.330		0.330
(2-Chloroisopropyl)ether	0.330		0.330	4-Chlorophenyl-phenylether			0.330
.ethylphenol	0.330	ט כ	0.330	Fluorene	0.330		0.330
N-Nitroso-di-n-propylamine	0.330		0.330	4-Nitroaniline	0.825		0.825
Hexachloroethane	0.330		0.330	4,6-Dinitro-2-methylphenol		-	0.825
Nitrobenzene	0.330	ט כ	0.330	N-Nitrosodiphenylamine (1)			0.330
Isophorone	0.330		0.330	4-Bromophenyl-phenylether	0.33		0.330
2-Nitrophenol	0.330	ט כ	0.330	Hexachlorobenzene	0.33		0.330
2,4-Dimethylphenol	0.330	ט כ	0.330	Pentachlorophenol	0.82		0.825
Benzoic Acid	0.330	ט כ	0.330	Phenanthrene	0.33		0.330
bis(2-Chloroethoxy)methane	0.330	ט כ	0.330	Anthracene	0.33		0.330
2,4-Dichlorophenol	0.330	υČ	ŭ.330	Di-n-butylphthalate	0.33		0.330
1,2,4-Trichlorobenzene	0.330	ט כ	0.330	Fluoranthene	0.33		0.330
Naphthalene	0.330	ט כ	0.330	Pyrene	0.33	ט כ	0.330
4-Chloroaniline	0.330	υ c	0.330	Butylbenzylphthalate	0.33		0.330
Hexachlorobutadiene	0.330	ט כ	0.330	3,3'-Dichlorobenzidine	0.33	ט כ	0.330
4-Chloro-3-methylphenol	0.330	ט ס	0.330	Benzo(a)anthracene	0.33		0.330
2-Methylnaphthalene	0.330	ט ס	0.330	Chrysene	0.33	ט כ	0.330
Hexachlorocyclopentadiene	0.330	ט כ	0.330	bis(2-Ethylhexyl)phthalate	0.33	ט כ	0.330
2,4,6-Trichlorophenol	0.330	υ 0	0.330	Di-n-octylphthalate	0.33	ט כ	0.330
2,4,5-Trichlorophenol	0.82	5 U	0.825	Benzo(b)fluoranthene	0.33	ט כ	0.330
2-Chloronaphthalene	0.330	υ 0	0.330	Benzo(k)fluoranthene	0.33	ט כ	0.330
2-Nitroaniline	0.82	5 U	0.825	Benzo(a)pyrene	0.33	ט כ	0.330
Dimethylphthalate	0.33	υ 0	0.330	Indeno(1,2,3-cd)pyrene	0.33	ט כ	0.330
Acenaphthylene	0.33		0.330	Dibenzo(a,h)anthracene	0.33	ס כ	0.330
				Benzo(g,h,i)perylene	0.33	ט כ	0.330

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512)88202624: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1021

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	76	23 - 120				
2-Fluorobiphenyl	76	30 - 115				
Terphenyl-D14	80	18 - 137				
Phenol-D5	70	24 - 113				
2-Fluorophenol	71	25 - 121				
2.4.6-Tribromophenol	76	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1021

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 90.0900

UNITS: MG/KG

						_
	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date	
 Arsenic	1.0	UN	1.0	7060	11/09/93	
Aluminum	6700	N*	18	6010	11/23/93	
Barium	630	N*	18	6010	11/23/93	
Beryllium	0.72		0.45	6010	11/23/93	
Cadmium	0.45	U	0.45	6010	11/23/93	
Chromium	10		0.90	6010	11/23/93	
Copper	6.2		2.3	6010	11/23/93	
Iron	10000	N*	9.0	6010	11/23/93	
Nickel	11	N	3.6	6010	11/23/93	
Lead	5.4	N	0.31	7421	11/09/93	
Mercury	0.022	บ	0.022	7471	11/06/93	
Silver	0.90	ប	0.90	6010	11/23/93	
Zinc	14		1.8	6010	11/23/93	

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6484: B3-10-300

SAMPLE ID: A1500

SAMPLE DATE: 10/21/93 11:18:00

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.100	0.10	MG/KG	11/02/93	EPA7196

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1500

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/03/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

			Re	eporting				Re	portin
	Result	Qua.	L	Limit		Result	Qua		•
Chloromethane	1	.0	U	10	1,2-Dichloropropane		5	**	-
Bromomethane		.0	Ū	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride		.0	U	10	Trichloroethene		5	U	5
Chloroethane]	.0	U	10	Chlorodibromomethane		5	ប	5
Methylene chloride	3.	1	J	10	1,1,2-Trichloroethane		5	ם	5
Acetone	7.	3	J	100	Benzene		5	ט	5 5
Carbon disulfide		5	U	5	cis-1,3-Dichloropropene		5	ט	5 5
1,1-Dichloroethene		5	U	 5	2-Chloroethylvinyl ether	•	10	ט	10
-Dichloroethane		5	U	5	Bromoform	-	5	ט	5
ans-1,2-Dichloroethene		5	Ū	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene		5	U	5	4-Methyl-2-pentanone		0	U	50
Chloroform		5	U	5	Tetrachloroethene	•	5	ט	5
1,2-Dichloroethane		5	U	5	1,1,2,2-Tetrachloroethane		5	Ū	5
2-Butanone	3.	4 J	В	100	Toluene		5	U	5
1,1,1-Trichloroethane		5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	1	0	U	10	Styrene		5	ט	5
Dichlorobromomethane		5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits				
TOLUENE-D8	99	81 - 117				
BROMOFLUOROBENZENE	99	74 - 121				
1,2-DICHLOROETHANE-D4	109	70 - 120				

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1500 SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 10/29/93
ANALYSIS DATE: 11/08/93
DILUTION FACTOR: 0.033

Phenol 0.330 U 0.330 2,6-Dinitrotoluene 0.330 bis(2-Chloroethyl)ether 0.330 U 0.330 3-Nitroaniline 0.825	Reporti al Limit U 0.330 U 0.825
Phenol 0.330 U 0.330 2,6-Dinitrotoluene 0.330	บ 0.330
0.550 0 0.550 2,0 Dimitilocoluene 0.550	
	U 0.825
2-Chlorophenol 0.330 U 0.330 Acenaphthene 0.330	ຫ 0.330
1,3-Dichlorobenzene 0.330 U 0.330 2,4-Dinitrophenol 0.825	U 0.825
1,4-Dichlorobenzene 0.330 U 0.330 4-Nitrophenol 0.825	บ 0.825
Benzyl alcohol 0.330 U 0.330 Dibenzofuran 0.330	ຫ 0.330
1,2-Dichlorobenzene 0.330 U 0.330 2,4-Dinitrotoluene 0.330	ช 0.330
2-Methylphenol 0.330 U 0.330 Diethylphthalate 0.330	ຫ 0.330
(2-Chloroisopropyl)ether 0.330 U 0.330 4-Chlorophenyl-phenylether 0.330	บ 0.330
Aethylphenol 0.330 U 0.330 Fluorene 0.330	บ 0.330
N-Nitroso-di-n-propylamine 0.330 U 0.330 4-Nitroaniline 0.825	บ 0.825
Hexachloroethane 0.330 U 0.330 4,6-Dinitro-2-methylphenol 0.825	U 0.825
Nitrobenzene 0.330 U 0.330 N-Nitrosodiphenylamine (1) 0.330	บ 0.330
Isophorone 0.330 U 0.330 4-Bromophenyl-phenylether 0.330	บ 0.330
2-Nitrophenol 0.330 U 0.330 Hexachlorobenzene 0.330	บ 0.330
2,4-Dimethylphenol 0.330 U 0.330 Pentachlorophenol 0.825	ช 0.825
Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330	บ 0.330
bis(2-Chloroethoxy)methane 0.330 U 0.330 Anthracene 0.330	บ 0.330
2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330	U 0.330
1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330	บ 0.330
Naphthalene 0.330 U 0.330 Pyrene 0.330	บ 0.330
4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330	ຫ 0.330
Hexachlorobutadiene 0.330 U 0.330 3,3'-Dichlorobenzidine 0.330	U 0.330
4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330	บ 0.330
2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330	U 0.330
Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330	ຫ 0.330
	TB 0.330
2,4,5-Trichlorophenol 0.825 U 0.825 Benzo(b)fluoranthene 0.330	ຫ 0.330
2-Chloronaphthalene 0.330 U 0.330 Benzo(k)fluoranthene 0.330	บ 0.330
2-Nitroaniline 0.825 U 0.825 Benzo(a)pyrene 0.330	บ 0.330
Dimethylphthalate 0.330 U 0.330 Indeno(1,2,3-cd)pyrene 0.330	บ 0.330
Acenaphthylene 0.330 U 0.330 Dibenzo(a,h)anthracene 0.330	บ 0.330
Benzo(g,h,i)perylene 0.330	บ 0.330

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01

(512) 892-6684 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1500

SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	79	23 - 120				
2-Fluorobiphenyl	88	30 - 115				
Terphenyl-D14	89	18 - 137				
Phenol-D5	65	24 - 113				
2-Fluorophenol	56	25 - 121				
2,4,6-Tribromophenol	95	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1500

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 568.181

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	5.4	UN	5.4	7060	11/10/93
Aluminum	15000	N*	110	6010	11/23/93
Barium	1100	N*	110	6010	11/23/93
Beryllium	2.8	U	2.8	6010	11/23/93
Cadmium	2.8	บ	2.8	6010	11/23/93
Chromium	13		5.7	6010	11/23/93
Copper	14	U	14	6010	11/23/93
Iron	13000	N*	57	6010	11/23/93
Nickel	23	N	23	6010	11/23/93
Lead	4.0	N	0.33	7421	11/09/93
Mercury	0.021	U	0.021	7471	11/06/93
Silver	5.7	ט	5.7	6010	11/23/93
Zinc	30		11	6010	11/23/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

SAMPLE ID: A1501

SAMPLE DATE: 10/21/93 12:57:00

	Note		Reporting		Date	Method	
Test Name	Ref	Result	Limit	Units	Analyzed	Reference	
Chromium VI		0.100	0.10	MG/KG	11/02/93	EPA7196	

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1501
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/03/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Re	portin
	Result Q	ual	Limit		Result	Qua.	1	Limit
Chloromethane	10	บ	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	1.7	J	10	1,1,2-Trichloroethane		5	U	5
Acetone	6.1	J	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
-Dichloroethane	5	U	5	Bromoform		5	U	5
.ns-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	4.2	JB	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	บ	10	Styrene		5	U	5
Dichlorobromomethane	5	Ū	5	Xylenes, total		5	U	5

Surrogates	* Recovery	Limits
TOLUENE-D8	105	81 - 117
BROMOFLUOROBENZENE	94	74 - 121
1,2-DICHLOROETHANE-D4	105	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01⁽⁵¹²)802-6684 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1501 SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 10/29/93
ANALYSIS DATE: 11/08/93
DILUTION FACTOR: 0.033

UNITS: MG/KG	0.033	Re	eporting			1	Report
·	Result		Limit		Result	Qual	Limi
•							
Phenol	0.330	ט (0.330	2,6-Dinitrotoluene	0.330) U	0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.82	ט פ	0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330	U (0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.82	U	0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.82	5 0	0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.33		0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.33	ט כ	0.330
2-Methylphenol	0.330		0.330	Diethylphthalate	0.33	ט כ	0.330
(2-Chloroisopropyl)ethe			0.330	4-Chlorophenyl-phenylether	r 0.33	ט כ	0.330
Methylphenol	0.330		0.330	Fluorene	0.33	ט כ	0.330
N-Nitroso-di-n-propylamine			0.330	4-Nitroaniline	0.82	5 U	0.825
Hexachloroethane	0.330		0.330	4,6-Dinitro-2-methylpheno:	0.82	5 U	0.825
Nitrobenzene	0.330		0.330	N-Nitrosodiphenylamine (1)		ס כ	0.330
Isophorone	0.330		0.330	4-Bromophenyl-phenylether		ט כ	0.330
2-Nitrophenol	0.330		0.330	Hexachlorobenzene	0.33	ט כ	0.330
2,4-Dimethylphenol	0.330		0.330	Pentachlorophenol	0.82	5 ซ	0.82!
Benzoic Acid	0.33		0.330	Phenanthrene	0.33		0.330
bis(2-Chloroethoxy)methane			0.330	Anthracene	0.33		0.330
2,4-Dichlorophenol	0.33	ט כ	0.330	Di-n-butylphthalate	0.33		0.330
1,2,4-Trichlorobenzene	0.33		0.330	Fluoranthene	0.33		0.330
Naphthalene	0.33	ט ס	0.330	Pyrene	0.33	-	0.330
4-Chloroaniline	0.33	ט ס	0.330	Butylbenzylphthalate	0.33	-	0.33
Hexachlorobutadiene	0.33	ט ס	0.330	3,3'-Dichlorobenzidine	0.33		0.33
4-Chloro-3-methylphenol	0.33	0 0	0.330	Benzo(a)anthracene	0.33	_	0.33
2-Methylnaphthalene	0.33	0 U	0.330	Chrysene	0.33	-	0.33
Hexachlorocyclopentadiene	0.33	0 U	0.330	bis(2-Ethylhexyl)phthalat	e 0.33	-	0.33
2,4,6-Trichlorophenol	0.33	0 U	0.330	Di-n-octylphthalate	0.08		0.33
2,4,5-Trichlorophenol	0.82	5 ช	0.825	Benzo(b)fluoranthene	0.33		0.33
2-Chloronaphthalene	0.33	0 0	0.330	Benzo(k)fluoranthene	0.33		0.33
2-Nitroaniline	0.82	5 Ü	0.825	Benzo(a)pyrene	0.33	-	0.33
Dimethylphthalate	0.33	0 τ	0.330	Indeno(1,2,3-cd)pyrene	0.33		0.33
Acenaphthylene	0.33	0 0	0.330	Dibenzo(a,h)anthracene	0.33	-	0.33
				Benzo(g,h,i)perylene	0.33	0 0	0.33

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1501

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	77	23 - 120				
2-Fluorobiphenyl	88	30 - 115				
Terphenyl-D14	92	18 - 137				
Phenol-D5	64	24 - 113				
2-Fluorophenol	55	25 - 121				
2,4,6-Tribromophenol	100	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 59 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1501

SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 104.166

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
 Arsenic	2.9	N	0.93	7060	11/09/93
Aluminum	9900	N*	21·	6010	11/23/93
Barium	5 50	N*	21	6010	11/23/93
Beryllium	1.1		0.52	6010	11/23/93
Cadmium	0.52	U	0.52	6010	11/23/93
Chromium	11		1.0	6010	11/23/93
Copper	5.9		2.6	6010	11/23/93
Iron	11000	N*	10	6010	11/23/93
Nickel	7.3	N	4.2	6010	11/23/93
Lead	8.5	N	1.1	7421	11/09/93
Mercury	0.024	U	0.024	7471	11/06/93
Silver	1.0	บ	1.0	6010	11/23/93
Zinc	13		2.1	6010	11/23/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

SAMPLE ID: A1502

SAMPLE DATE: 10/21/93 14:44:00

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.100	0.10	MG/KG	11/03/93	EPA7196

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1502

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/03/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

			Reporting	ī		*	R	portinc
	Result	Qual	Limit		Result	Qua		
Chloromethane	1	0 1	U 10	1,2-Dichloropropane		_		_
Bromomethane	1	_	U 10	trans-1 3-Dichless-		5	U	5
Vinyl chloride		_	J 10	trans-1,3-Dichloropropene Trichloroethene		5	U	5
Chloroethane	_	_	J 10			5	U	5
Methylene chloride	1		J 10	Chlorodibromomethane		5	U	5
Acetone	3		100	1,1,2-Trichloroethane		5	U	5
Carbon disulfide	_	_	J 5	Benzene		5	U	5
1.1-Dichloroethene		-	J 5	cis-1,3-Dichloropropene		5	Ū	5
-Dichloroethane		5 t	•	2-Chloroethylvinyl ether		LO	U	10
ans-1,2-Dichloroethene		5 t		Bromoform		5	U	5
cis-1,2-Dichloroethene		5 t	•	2-Hexanone	-	50	U	50
Chloroform		5 t	•	4-Methyl-2-pentanone	5	50	U	50
1,2-Dichloroethane		5 T	•	Tetrachloroethene		5	U	5
2-Butanone	7.0	•	•	1,1,2,2-Tetrachloroethane		5	U	5
1,1,1-Trichloroethane		5 T		Toluene		5	U	5
Carbon tetrachloride		5 U	•	Chlorobenzene		5	U	5
Vinyl acetate	_	_	•	Ethylbenzene		5	U	5
Dichlorobromomethane	10			Styrene		5	U	5
	9	ร บ	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits			
TOLUENE-D8	105	81 - 117			
BROMOFLUOROBENZENE	94	74 - 121			
1,2-DICHLOROETHANE-D4	106	70 - 120			

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684r: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1502 SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 10/29/93
ANALYSIS DATE: 11/08/93
DILUTION FACTOR: 0.033

UNITS: MG/KG Reporting				Report				
•	esult	Qual	Limit		Result	Qual	Limi	
		-						
Phenol	0.330		0.330	2,6-Dinitrotoluene	0.33		0.330	
bis(2-Chloroethyl)ether	0.330	ט כ	0.330	3-Nitroaniline	0.82		0.825	
2-Chlorophenol	0.330	ט כ	0.330	Acenaphthene	0.33		0.330	
1,3-Dichlorobenzene	0.330	ט כ	0.330	2,4-Dinitrophenol	0.82		0.825	
1,4-Dichlorobenzene	0.330	ט כ	0.330	4-Nitrophenol	0.82		0.825	
Benzyl alcohol	0.33	ט ס	0.330	Dibenzofuran	0.33		0.330	
1,2-Dichlorobenzene	0.33	ט ס	0.330	2,4-Dinitrotoluene	0.33		0.330	
2-Methylphenol	0.33	0 U	0.330	Diethylphthalate	0.33		0.330	
(2-Chloroisopropyl)ether	0.33	0 σ	0.330	4-Chlorophenyl-phenylether			0.330	
Aethylphenol	0.33	0 U	0.330	Fluorene	0.33		0.330	
N-Nitroso-di-n-propylamine	0.33	0 U	0.330	4-Nitroaniline	0.82		0.825	
Hexachloroethane	0.33	U 0	0.330	4,6-Dinitro-2-methylphenol			0.825	
Nitrobenzene	0.33	0 U	0.330	N-Nitrosodiphenylamine (1)			0.330	
Isophorone	0.33	ט ס	0.330	4-Bromophenyl-phenylether	0.33		0.330	
2-Nitrophenol	0.33	ט ס	0.330	Hexachlorobenzene	0.33		0.330	
2,4-Dimethylphenol	0.33	0 υ	0.330	Pentachlorophenol	0.82		0.825	
Benzoic Acid	0.33	υ 0	0.330	Phenanthrene	0.33		0.330	
bis(2-Chloroethoxy)methane	0.33		0.330	Anthracene	0.33		0.330	
2,4-Dichlorophenol	0.33	O U	0.330	Di-n-butylphthalate	0.33		0.330	
1,2,4-Trichlorobenzene	0.33	0 U	0.330	Fluoranthene	0.33		0.330	
Naphthalene	0.0	5 J	0.330	Pyrene	0.33		0.330	
4-Chloroaniline	0.33	0 U	0.330	Butylbenzylphthalate	0.33		0.330	
Hexachlorobutadiene	0.33	0 U	0.330	3,3'-Dichlorobenzidine	0.33		0.330	
4-Chloro-3-methylphenol	0.33	0 U	0.330	Benzo(a)anthracene	0.33		0.330	
2-Methylnaphthalene	0.33	0 U	0.330	Chrysene	0.33	-	0.330	
Hexachlorocyclopentadiene	0.33	0 U	0.330	bis(2-Ethylhexyl)phthalate			0.330	
2,4,6-Trichlorophenol	0.33	υ 0	0.330	Di-n-octylphthalate	0.1	_	0.330	
2,4,5-Trichlorophenol	0.82	5 U	0.825	Benzo(b)fluoranthene	0.33	-	0.330	
2-Chloronaphthalene	0.33	0 υ	0.330	Benzo(k)fluoranthene	0.33	-	0.330	
2-Nitroaniline	0.82	5 U	0.825	Benzo(a)pyrene	0.33	_	0.330	
Dimethylphthalate	0.33	0 U	0.330	<pre>Indeno(1,2,3-cd)pyrene</pre>	0.33	-	0.330	
Acenaphthylene	0.33	0 U	0.330	Dibenzo(a,h)anthracene	0.33		0.330	
				Benzo(g,h,i)perylene	0.33	ο υ	0.330	

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684r: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1502

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits			
Nitrobenzene-D5	71	23 - 120			
2-Fluorobiphenyl	82	30 - 115			
Terphenyl-D14	90	18 - 137			
Phenol-D5	62	24 - 113			
2-Fluorophenol	52	25 - 121			
2,4,6-Tribromophenol	108	19 - 122			

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 64 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1502 SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 90.9090

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	3.1	N	1.1	7060	11/09/93
Aluminum	10000	N*	18	6010	11/23/93
Barium	330	N*	18	6010	11/23/93
Beryllium	0.91		0.45	6010	11/23/93
Cadmium	0.45	บ	0.45	6010	11/23/93
Chromium	12		0.91	6010	11/23/93
Copper	5.7		2.3	6010	11/23/93
Iron	11000	N*	9.1	6010	11/23/93
Nickel	8.9	N	3.6	6010	11/23/93
Lead	8.4	N	0.32	7421	11/09/93
Mercury	0.021	บ	0.021	7471	11/06/93
Silver	0.91	U	0.91	6010	11/23/93
Zinc	21		1.8	6010	11/23/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- w post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance</p>
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892 6684: B3-10-300

SAMPLE ID: A1503

SAMPLE DATE: 10/21/93 14:44:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.100	0.10	MG/KG	11/03/93	EPA7196

Page: 66 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1503

SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 11/03/93

DILUTION FACTOR: 1.0

UNITS: UG/KG

UNITS: UG/RG			Der	porting				Re	portin
	Result		_	Limit		Result	Qual		-
	VEDUIC	Quar	•	J.L					
Chloromethane		LO	U	10	1,2-Dichloropropane		5	U	5
Bromomethane		LO	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride		LO	U	10	Trichloroethene		5	U	5
Chloroethane		LO	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	0	. 8	J	10	1,1,2-Trichloroethane		5	U	5
Acetone	:	28	J	100	Benzene		5	U	5
Carbon disulfide		5	U	5	cis-1,3-Dichloropropene		5	U	5
1.1-Dichloroethene		5	U	5	2-Chloroethylvinyl ether		10	U	10
-Dichloroethane		5	U	5	Bromoform		5	U	5
ans-1,2-Dichloroethene		5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene		5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform		5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	3	.3 J	JB	100	Toluene		5	U	5
1,1,1-Trichloroethane		5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5	U	5	Ethylbenzene		5	U	5
Vinyl acetate		10	U	10	Styrene		5	U	5
Dichlorobromomethane		5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	106	81 - 117
BROMOFLUOROBENZENE	97	74 - 121
1.2-DICHLOROETHANE-D4	108	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1503
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 10/29/93
ANALYSIS DATE: 11/08/93
DILUTION FACTOR: 0.033
UNITS: MG/KG

UNITS: MG/KG	Result		eporting Limit		Result	Qual	Reporti: Limit
Phenol	0.330	ט (0.330	2,6-Dinitrotoluene	0 330		0 220
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.330	_	0.330
2-Chlorophenol	0.330		0.330	Acenaphthene	0.825 0.330	_	0.825
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.330		0.330
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.825	_	0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.825		0.825
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.330		0.330
2-Methylphenol	0.330		0.330	Diethylphthalate	0.330		0.330
(2-Chloroisopropyl)ether	r 0.330		0.330	4-Chlorophenyl-phenylether	0.330		0.330
Methylphenol	0.330		0.330	Fluorene	0.330	_	0.330
N-Nitroso-di-n-propylamine	0.330		0.330	4-Nitroaniline	0.330		0.330
Hexachloroethane	0.330		0.330	4,6-Dinitro-2-methylphenol	0.825		0.825
Nitrobenzene	0.330		0.330	N-Nitrosodiphenylamine (1)			0.825
Isophorone	0.330		0.330	4-Bromophenyl-phenylether	0.330		0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330		0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.330		0.330
Benzoic Acid	0.330		0.330	Phenanthrene	0.825		0.825
bis(2-Chloroethoxy)methane	0.330		0.330	Anthracene	0.330		0.330
2,4-Dichlorophenol	0.330		0.330	Di-n-butylphthalate	0.330		0.330
1,2,4-Trichlorobenzene	0.330	ט (0.330	Fluoranthene	0.330		0.330
Naphthalene	0.330		0.330	Pyrene			0.330
4-Chloroaniline	0.330		0.330	Butylbenzylphthalate	0.330 0.330		0.330
Hexachlorobutadiene	0.330		0.330	3,3'-Dichlorobenzidine	0.330		0.330
4-Chloro-3-methylphenol	0.330		0.330	Benzo(a)anthracene	0.330		0.330
2-Methylnaphthalene	0.330		0.330	Chrysene	0.330		0.330 0.330
Hexachlorocyclopentadiene	0.330	U (0.330	bis(2-Ethylhexyl)phthalate	0.330		0.330
2,4,6-Trichlorophenol	0.330		0.330	Di-n-octylphthalate	0.330		0.330
2,4,5-Trichlorophenol	0.825	U C	0.825	Benzo(b)fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330	ט כ	0.330	Benzo(k)fluoranthene	0.330		0.330
2-Nitroaniline	0.825	ט ט	825	Benzo(a)pyrene	0.330		0.330
Dimethylphthalate	0.330	ט כ	.330	Indeno(1,2,3-cd)pyrene	0.330		0.330
Acenaphthylene	0.330	υc	.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330		0.330
				(3: 1 /2 2		5 (,

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1503

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	68	23 - 120				
2-Fluorobiphenyl	82	30 - 115				
Terphenyl-D14	85	18 - 137				
Phenol-D5	60	24 - 113				
2-Fluorophenol	51	25 - 121				
2,4,6-Tribromophenol	99	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 69 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1503

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 111.111

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.6	N	1.2	7060	11/09/93
Aluminum	13000	N*	22	6010	11/23/93
Barium	470	N*	22	6010	11/23/93
Beryllium	1.1		0.56	6010	11/23/93
Cadmium	0.56	U	0.56	6010	11/23/93
Chromium	14		1.1	6010	11/23/93
Copper	16		2.8	6010	11/23/93
Iron	13000	N*	11	6010	11/23/93
Nickel	11	N	4.4	6010	11/23/93
Lead	6.6	N	0.35	7421	11/09/93
Mercury	0.024	U	0.024	7471	11/06/93
Silver	1.1	บ	1.1	6010	11/23/93
Zinc	20		2.2	6010	11/23/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA < 0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

SAMPLE ID: A1504

SAMPLE DATE: 10/21/93 15:05:00

SAMPLE MATRIX: WATER

	Note	• •	Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.100	0.010	MG/L	10/22/93	EPA7196

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1504
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 10/31/93
DILUTION FACTOR: 1.0

UNITS: UG/L

0N113. 00,2			Reporti	ng			Re	porti
	Result	Qual	Limit	-	Result	Qua.	1	Limit
Chloromethane	3	L O 1	U 10	1,2-Dichloropropane		5	U	5
Bromomethane]	LO 1	U 10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	_	-	U 10			5	U	5
Chloroethane	_		U 10			5	U	5
Methylene chloride	_	.0 J				5	U	5
Acetone			U 100	• •		5	U	5
Carbon disulfide		_	U 5	cis-1,3-Dichloropropene		5	U	5
1.1-Dichloroethene		_	U 5	2-Chloroethylvinyl ether	1	10	U	10
'-Dichloroethane		_	U 5	Bromoform		5	U	5
ans-1,2-Dichloroethene		_	U 5	2-Hexanone	5	50	U	5C
cis-1,2-Dichloroethene		5	U 5	4-Methyl-2-pentanone	5	50	U	5C
Chloroform		5	U 5			5	U	5
1,2-Dichloroethane		5	บ 5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	00	บ 100			5	U	5
1,1,1-Trichloroethane		5	บ 5	Chlorobenzene		5	U	5
Carbon tetrachloride		5	บ 5	Ethylbenzene		5	U	Ę
Vinyl acetate	:	10	U 10	-		5	U	Ę
Dichlorobromomethane			บ 5			5	U	į

Surrogates	% Recovery	Limits				
TOLUENE-D8	91	88 - 110				
BROMOFLUOROBENZENE	94	86 - 115				
1,2-DICHLOROETHANE-D4	100	76 - 114				

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result

 * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 802 01684: B3-10-300

TEST NAME: ABN ESL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1504
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: WATER

EXTRACTION DATE: 10/27/93
ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0

	1.0					_	
UNITS: UG/L			porting				Report:
Re	esult	Qual	Limit	·	Result	Qual	Limi [.]
Phenol	10	ט ט	10	2,6-Dinitrotoluene	10	ט כ	10
 			10	3-Nitroaniline	25		25
bis(2-Chloroethyl)ether	10		10	Acenaphthene	10		10
2-Chlorophenol	10		10	2,4-Dinitrophenol	2!	-	25
1,3-Dichlorobenzene	10		10	4-Nitrophenol	2		25
1,4-Dichlorobenzene	10		10	Dibenzofuran	10		10
Benzyl alcohol	10		10	2,4-Dinitrotoluene	10	-	10
1,2-Dichlorobenzene	10		10	Diethylphthalate	10	-	10
2-Methylphenol	10			4-Chlorophenyl-phenylether		_	10
:(2-Chloroisopropyl)ether	10		10	Fluorene	10		10
Methylphenol	10		10	4-Nitroaniline	10		10
N-Nitroso-di-n-propylamine	10		10	4,6-Dinitro-2-methylphenol		-	25
Hexachloroethane	10		10	•			10
Nitrobenzene	10		10	N-Nitrosodiphenylamine (1)	, 1	_	10
Isophorone	10		10	4-Bromophenyl-phenylether	1		10
2-Nitrophenol	10		10	Hexachlorobenzene	2	-	25
2,4-Dimethylphenol	10		10	Pentachlorophenol	1	_	10
Benzoic Acid	10	-	10	Phenanthrene	1	-	10
bis(2-Chloroethoxy)methane	10		10	Anthracene	1	-	10
2,4-Dichlorophenol	10		10	Di-n-butylphthalate			10
1,2,4-Trichlorobenzene	10	_	10	Fluoranthene	1	-	10
Naphthalene	10			Pyrene	1		
4-Chloroaniline	10	ט כ		Butylbenzylphthalate	1		10
Hexachlorobutadiene	10	ט כ		3,3'-Dichlorobenzidine	1		10
4-Chloro-3-methylphenol	10	ט כ	10	Benzo(a)anthracene	_	0 0	10
2-Methylnaphthalene	10	ט כ	10	Chrysene	1	_	10
Hexachlorocyclopentadiene	10	ט כ	10	bis(2-Ethylhexyl)phthalate	_	0 0	10
2,4,6-Trichlorophenol	10	ט כ	10	Di-n-octylphthalate	1	_	10
2,4,5-Trichlorophenol	10	ט כ	10	Benzo(b)fluoranthene	1	-	10
2-Chloronaphthalene	10	ט כ	10	Benzo(k)fluoranthene		0 0	10
2-Nitroaniline	2	5 U	25	Benzo(a)pyrene	1	0 υ	10
Dimethylphthalate	10	U	10	Indeno(1,2,3-cd)pyrene		0 υ	
Acenaphthylene	10	U	10	Dibenzo(a,h)anthracene	_	0 0	_
					•	A 71	10

Benzo(g,h,i)perylene

10

10 U

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1504

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	68	35 - 114				
2-Fluorobiphenyl	71	43 - 116				
Terphenyl-D14	84	33 - 141				
Phenol-D5	40	10 - 94				
2-Fluorophenol	60	21 - 100				
2.4.6-Tribromophenol	78	10 - 123				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1504

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: WATER

DILUTION FACTOR (6010): 1.00000

UNITS: mg/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010		0.010	7060	11/12/93
Aluminum	0.20	U	0.20	6010	11/16/93
Barium	0.20	U	0.20	6010	11/16/93
Beryllium	0.0050	U	0.0050	6010	11/16/93
Cadmium	0.0050	U	0.0050	6010	11/16/93
Chromium	0.010	U	0.010	6010	11/16/93
Copper	0.025	U	0.025	6010	11/16/93
Iron	0.10	U	0.10	6010	11/16/93
Nickel	0.040	U	0.040	6010	11/16/93
Lead	0.0030	U	0.0030	7421	11/11/93
Mercury	0.00020	U	0.00020	7471	11/08/93
Silver	0.010	U	0.010	6010	11/16/93
Zinc	0.020	U	0.020	6010	11/16/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

SAMPLE ID: A1505

SAMPLE DATE: 10/21/93 16:00:00

SAMPLE MATRIX: SOIL

	Note	Reporting			Reporting			Date Method	
Test Name	Ref	Result	Limit	Units	Analyzed Reference	e			
Chromium VI		0.100	0.10	MG/KG	11/03/93 EPA7196				

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1505

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/03/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Re	porti:
	Result (Qual	Limit		Result	Qual		Limit
Chloromethane	10) U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10) ซ	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10) ซ	10	Trichloroethene		5	U	5
Chloroethane	10	ט (10	Chlorodibromomethane		5	U	5
Methylene chloride	10) U	10	1,1,2-Trichloroethane		5	U	5
Acetone	3.2	JB	100	Benzene		5	U	5
Carbon disulfide	5	ប	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	ט פ	5	2-Chloroethylvinyl ether	1	LO	U	10
1-Dichloroethane	5	U	5	Bromoform		5	U	5
rans-1,2-Dichloroethene	5	ט פ	5	2-Hexanone	5	50	U	50
cis-1,2-Dichloroethene	5	ט פ	5	4-Methyl-2-pentanone	5	50	U	50
Chloroform	5	บ	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	ט ז	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	2.7	JB	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	i u	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	ט פ	5	Ethylbenzene		5	U	5
Vinyl acetate	10	ט (10	Styrene		5	U	5
Dichlorobromomethane	5	ט פ	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	101	81 - 117
BROMOFLUOROBENZENE	93	74 - 121
1,2-DICHLOROETHANE-D4	108	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892 6664: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1505

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 10/29/93
ANALYSIS DATE: 11/08/93
DILUTION FACTOR: 0.033

Phenol
Description Composition
Description Composition
Signature Sign
1,3-Dichlorobenzene 0.330 U 0.330 2,4-Dinitrophenol 0.825 U 0.825 1,4-Dichlorobenzene 0.330 U 0.330 Jobenzofuran 0.330 U 0.330 1,2-Dichlorobenzene 0.330 U 0.330 Dibenzofuran 0.330 U 0.330 2-Methylphenol 0.330 U 0.330 Diehylphthalate 0.330 U 0.330 N-Nitroso-di-n-propylether 0.330 U 0.330 Fluorene 0.330 U 0.330 N-Nitroso-di-n-propylamine 0.330 U 0.330 Fluorene 0.330 U 0.330 N-Nitrobenzene 0.330 U 0.330 Honorable 0.825 U 0.825 Nitrobenzene 0.330 U 0.330 Honorable 0.825 U 0.825 Nitrobenzene 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 2-Nitrophenol 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 2-Nitrophenol 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 2-Nitrophenol 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 Dis(2-Chloroethoxy)methane 0.330 U 0.330 Phenanthrene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Pyrene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Benzolable 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 Pyrene 0.330 U 0.330 Hexachlorobenzele 0.330 U 0.330 Pyrene 0.330 U 0.330 Hexachlorobenzele 0.330 U 0.330 Benzolable 0.330 U 0.330
1,4-Dichlorobenzene
No.
1,2-Dichlorobenzene
2-Methylphenol 0.330 U 0.330 Biethylphthalate 0.330 U 0.330 Methylphenol 0.330 U 0.330 Hornorphenyl-phenylether 0.330 U 0.330 U 0.330 Methylphenol 0.330 U 0.330 Hornorphenyl-phenylether 0.330 U 0.330 U 0.330 Methylphenol 0.330 U 0.330 Hornorphenyl-phenylether 0.330 U 0.330 U 0.330 Methylphenol 0.330 U 0.330 Hornorphenylether 0.325 U 0.825 Hexachloroethane 0.330 U 0.330 Hornorphenylether 0.330 U 0.330 U 0.330 Mexachloroethane (1) 0.330 U 0.330 U 0.330 Isophorone 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 Hexachlorophenol 0.825 U 0.825 Henzoic Acid 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Henzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 Hexachlorophenol 0.825 U 0.825 Henzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 Hexachlorophenol 0.330 U 0.330 Phenanthrene 0.330 U 0.330 U 0.330 Hexachlorophenol 0.330 U 0.330 Phenanthrene 0.330 U 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 Phenanthrene 0.330 U 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 Phenanthrene 0.330 U 0.330 Phenanthrene 0.330 U 0.330 U 0.330 U 0.330 Phenanthrene 0.330 U 0.330 U 0.330 U 0.330 U 0.330 U 0.330
1(2-Chloroisopropyl)ether
Methylphenol 0.330 U 0.330 Fluorene 0.330 U 0.330 N-Nitroso-di-n-propylamine 0.330 U 0.330 4-Nitroaniline 0.825 U 0.825 Hexachloroethane 0.330 U 0.330 4,6-Dinitro-2-methylphenol 0.825 U 0.825 Nitrobenzene 0.330 U 0.330 N-Nitrosodiphenylamine (1) 0.330 U 0.330 Isophorone 0.330 U 0.330 4-Bromophenyl-phenylether 0.330 U 0.330 2-Nitrophenol 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 2,4-Dimethylphenol 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 bis(2-Chloroethoxy)methane 0.330 U 0.330 Anthracene 0.330 U 0.330 2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.330 1,2,4-Trichlorobenzene 0.330 U 0.330 Pyrene 0.330 U 0.330 <
N-Nitroso-di-n-propylamine 0.330 U 0.330 4-Nitroaniline 0.825 U 0.825 Hexachloroethane 0.330 U 0.330 4,6-Dinitro-2-methylphenol 0.825 U 0.825 N-Nitrobenzene 0.330 U 0.330 N-Nitrosodiphenylamine (1) 0.330 U 0.330 Isophorone 0.330 U 0.330 4-Bromophenyl-phenylether 0.330 U 0.330 2-Nitrophenol 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 2,4-Dimethylphenol 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 bis(2-Chloroethoxy)methane 0.330 U 0.330 Phenanthrene 0.330 U 0.330 2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.330 1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Pyrene 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 Hexachlorobutadiene 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 Bis(2-Ethylhexyl)phthalate 0.330 U 0.330
Hexachloroethane 0.330 U 0.330 4,6-Dinitro-2-methylphenol 0.825 U 0.825 Nitrobenzene 0.330 U 0.330 N-Nitrosodiphenylamine (1) 0.330 U 0.330 Isophorone 0.330 U 0.330 4-Bromophenyl-phenylether 0.330 U 0.330 2-Nitrophenol 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 2,4-Dimethylphenol 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 bis(2-chloroethoxy)methane 0.330 U 0.330 Anthracene 0.330 U 0.330 2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.330 1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330
Nitrobenzene 0.330 U 0.330 N-Nitrosodiphenylamine (1) 0.330 U 0.330 Isophorone 0.330 U 0.330 4-Bromophenyl-phenylether 0.330 U 0.330 2-Nitrophenol 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 2,4-Dimethylphenol 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 bis(2-Chloroethoxy)methane 0.330 U 0.330 Anthracene 0.330 U 0.330 2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.330 1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330
Isophorone
2-Nitrophenol 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 Enzoic Acid 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.330 U 0.330 Pyrene 0.330 U 0.330 U 0.330 Pyrene 0.330 U 0.330 U 0.330 Pyrene 0.330 U 0.330 U 0.330 U 0.330 Pyrene 0.330 U
2,4-Dimethylphenol 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 bis(2-Chloroethoxy)methane 0.330 U 0.330 Anthracene 0.330 U 0.330 2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.330 1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Pyrene 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330
Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 bis(2-Chloroethoxy)methane 0.330 U 0.330 Anthracene 0.330 U 0.330 2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.330 1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Pyrene 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330
bis(2-Chloroethoxy)methane 0.330 U 0.330 Anthracene 0.330 U 0.330 2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.330 1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Pyrene 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330
2,4-Dichlorophenol 0.330 0.330 0.330 Di-n-butylphthalate 0.330 0.330 1,2,4-Trichlorobenzene 0.330 <td< td=""></td<>
1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Pyrene 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 Hexachlorobutadiene 0.330 U 0.330 3,3'-Dichlorobenzidine 0.330 U 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330
Naphthalene 0.330 U 0.330 Pyrene 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 Hexachlorobutadiene 0.330 U 0.330 3,3'-Dichlorobenzidine 0.330 U 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330
4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 Hexachlorobutadiene 0.330 U 0.330 Benzo(a)anthracene 0.330 U
Hexachlorobutadiene 0.330 U 0.330 3,3'-Dichlorobenzidine 0.330 U 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330
4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330 U 0.330 Chrysene 0.330 U 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330 U 0.330
2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330 U 0.330
Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330
Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330
2,4,0-IIICHIOIODHEHOI 0.330 0.330 DI h Occyphichae
2,4,5-Trichlorophenol 0.825 U 0.825 Benzo(b)fluoranthene 0.330 U 0.330
2-Chloronaphthalene 0.330 U 0.330 Benzo(k)fluoranthene 0.330 U 0.330
2-Nitroaniline 0.825 U 0.825 Benzo(a)pyrene 0.330 U 0.330
Dimethylphthalate 0.330 U 0.330 Indeno(1,2,3-cd)pyrene 0.330 U 0.330
Acenaphthylene 0.330 U 0.330 Dibenzo(a,h)anthracene 0.330 U 0.330
Benzo(g,h,i)perylene 0.330 U 0.330

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1505 SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits					
Nitrobenzene-D5	66	23 - 120					
2-Fluorobiphenyl	81	30 - 115					
Terphenyl-D14	82	18 - 137					
Phenol-D5	60	24 - 113					
2-Fluorophenol	50	25 - 121					
2,4,6-Tribromophenol	96	19 - 122					

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1505 SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 100.000

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.8	N	1.0	7060	11/09/93
Aluminum	8300	N*	20 '	6010	11/23/93
Barium	370	N*	20	6010	11/23/93
Beryllium	0.87		0.50	6010	11/23/93
Cadmium	0.50	U	0.50	6010	11/23/93
Chromium	11		1.0	6010	11/23/93
Copper	5.5		2.5	6010	11/23/93
Iron	9500	N*	10	6010	11/23/93
Nickel	9.1	N	4.0	6010	11/23/93
Lead	6.4	N	0.31	7421	11/09/93
Mercury	0.023	U	0.023	7471	11/06/93
Silver	1.0	U	1.0	6010	11/23/93
Zinc	18		2.0	6010	11/23/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 802-6684 B3-10-300

SAMPLE ID: A1506

SAMPLE DATE: 10/21/93 16:50:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.100	0.10	MG/KG	11/03/93	EPA7196

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1506

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/04/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Re	porti
	Result Q	ual	Limit		Result	Qual	•	Limit
Chloromethane	10	ប	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	บ	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	ט	10	1,1,2-Trichloroethane		5	U	5
Acetone	4.6	JB	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1.1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
-Dichloroethane	5	U	5	Bromoform		5	U	5
ans-1,2-Dichloroethene	5	U	5	2-Hexanone	;	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	2.8	JB	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	บ	10	Styrene		5	U	5
Dichlorobromomethane	5	ט	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits				
TOLUENE-D8	102	81 - 117				
BROMOFLUOROBENZENE	97	74 - 121				
1,2-DICHLOROETHANE-D4	104	70 - 120				

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1506 SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 10/29/93
ANALYSIS DATE: 11/03/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			I	Report:
F	Result	Qual	Limit		Result	Qual	Limi ¹
Phenol	0.330	-	0.330	2,6-Dinitrotoluene	0.330	_	0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.82		0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330	-	0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.829	-	0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.82	-	0.825
Benzyl alcohol	0.33		0.330	Dibenzofuran	0.330		0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.330		0.330
2-Methylphenol	0.330		0.330	Diethylphthalate	0.330		0.330
3(2-Chloroisopropyl)ether	0.330		0.330	4-Chlorophenyl-phenylether			0.330
Methylphenol	0.33		0.330	Fluorene	0.330		0.330
N-Nitroso-di-n-propylamine	0.33		0.330	4-Nitroaniline	0.829		0.825
Hexachloroethane	0.33	o u	0.330	4,6-Dinitro-2-methylphenol			0.825
Nitrobenzene	0.33	υ 0	0.330	N-Nitrosodiphenylamine (1)	0.330		0.330
Isophorone	0.33	U O	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.33	υ 0	0.330	Hexachlorobenzene	0.330		0.330
2,4-Dimethylphenol	0.33	υ 0	0.330	Pentachlorophenol	0.82	U	0.825
Benzoic Acid	0.33	O U	0.330	Phenanthrene	0.330	ט כ	0.330
bis(2-Chloroethoxy)methane	0.33	υ 0	0.330	Anthracene	0.330		0.330
2,4-Dichlorophenol	0.33	ט ט	0.330	Di-n-butylphthalate	0.330		0.330
1,2,4-Trichlorobenzene	0.33	υ 0	0.330	Fluoranthene	0.330		0.330
Naphthalene	0.33	0 U	0.330	Pyrene	0.330	ט כ	0.330
4-Chloroaniline	0.33	0 U	0.330	Butylbenzylphthalate	0.330	ט כ	0.330
Hexachlorobutadiene	0.33	υ 0	0.330	3,3'-Dichlorobenzidine	0.330	ט כ	0.330
4-Chloro-3-methylphenol	0.33	U 0	0.330	Benzo(a)anthracene	0.330	υ (0.330
2-Methylnaphthalene	0.33	υ 0	0.330	Chrysene	0.330	ט כ	0.330
Hexachlorocyclopentadiene	0.33	υ 0	0.330	bis(2-Ethylhexyl)phthalate	0.330	ט כ	0.330
2,4,6-Trichlorophenol	0.33	υ 0	0.330	Di-n-octylphthalate	0.082	2 JB	0.330
2,4,5-Trichlorophenol	0.82	5 บ	0.825	Benzo(b)fluoranthene	0.330	υ (0.330
2-Chloronaphthalene	0.33	υ 0	0.330	Benzo(k)fluoranthene	0.330	ט כ	0.330
2-Nitroaniline	0.82	5 บ	0.825	Benzo(a)pyrene	0.330	ט כ	0.330
Dimethylphthalate	0.33		0.330	Indeno(1,2,3-cd)pyrene	0.330	ט כ	0.330
Acenaphthylene	0.33	υ 0	0.330	Dibenzo(a,h)anthracene	0.330	υ (0.330
				Benzo(g,h,i)perylene	0.330	ט כ	0.330

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1506 SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	58	23 - 120				
2-Fluorobiphenyl	68	30 - 115				
Terphenyl-D14	69	18 - 137				
Phenol-D5	52	24 - 113				
2-Fluorophenol	65	25 - 121				
2,4,6-Tribromophenol	56	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1506

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 104.166

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	4.4	N	0.93	7060	11/09/93
Aluminum	7200	N*	21	6010	11/23/93
Barium	130	N*	21	6010	11/23/93
Beryllium	1.1		0.52	6010	11/23/93
Cadmium	0.52	ប	0.52	6010	11/23/93
Chromium	11		1.0	6010	11/23/93
Copper	9.0		2.6	6010	11/23/93
Iron	10000	N*	10	6010	11/23/93
Nickel	17	N	4.2	6010	11/23/93
Lead	8.6	N	1.1	7421	11/09/93
Mercury	0.022	U	0.022	7471	11/06/93
Silver	1.0	U	1.0	6010	11/23/93
Zinc	20		2.1	6010	11/23/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

SAMPLE ID: A1507

SAMPLE DATE: 10/21/93 17:08:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Dat	e	Method
Test Name	Ref	Result	Limit	Units	Analy	zed	Reference
Chromium VI		0.100	0.10	MG/KG	11/03	/93	EPA7196

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1507 **SAMPLE DATE: 10/21/93** SAMPLE MATRIX: SOIL ANALYSIS DATE: 11/04/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

·		R	eporting				Re	porti
	Result Qu	ıal	Limit		Result	Qual		Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	1.5	JB	10	1,1,2-Trichloroethane		5	U	5
Acetone	5.0	JB	100	Benzene		5	Ū	5
Carbon disulfide	5	ប	5	cis-1,3-Dichloropropene		5	U	5
1.1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		LO	U	10
-Dichloroethane	5	U	5	Bromoform		5	U	5
ans-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	4.5	JB	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	99	81 - 117
BROMOFLUOROBENZENE	96	74 - 121
1,2-DICHLOROETHANE-D4	110	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1507 **SAMPLE DATE: 10/21/93** SAMPLE MATRIX: SOIL

EXTRACTION DATE: 10/29/93 ANALYSIS DATE: 11/03/93 DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			Report
	esult		Limit		Result	Qual Limi
						Angr Dimi
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	บ 0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.825	
2-Chlorophenol	0.330	U (0.330	Acenaphthene	0.330	
1,3-Dichlorobenzene	0.330	ט כ	0.330	2,4-Dinitrophenol	0.825	
1,4-Dichlorobenzene	0.330	ט כ	0.330	4-Nitrophenol	0.825	U 0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	บ 0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	บ 0.330
2-Methylphenol	0.330	U (0.330	Diethylphthalate	0.330	บ 0.330
(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U 0.330
Aethylphenol	0.330	U	0.330	Fluorene	0.330	ຫ 0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	ช 0.825
Hexachloroethane	0.330	ט (0.330	4,6-Dinitro-2-methylphenol	0.825	U 0.825
Nitrobenzene	0.330	U (0.330	N-Nitrosodiphenylamine (1)	0.330	U 0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	บ 0.330
2-Nitrophenol	0.330	U (0.330	Hexachlorobenzene	0.330	U 0.330
2,4-Dimethylphenol	0.330		0.330	Pentachlorophenol	0.825	ช 0.825
Benzoic Acid	0.330	U (0.330	Phenanthrene	0.330	U 0.330
bis(2-Chloroethoxy)methane	0.330	ט (0.330	Anthracene	0.330	บ 0.330
2,4-Dichlorophenol	0.330	ט (0.330	Di-n-butylphthalate	0.330	ช 0.330
1,2,4-Trichlorobenzene	0.330	ט	0.330	Fluoranthene	0.330	U 0.330
Naphthalene	0.330	ט	0.330	Pyrene	0.330	U 0.330
4-Chloroaniline	0.330	ט	0.330	Butylbenzylphthalate	0.330	U 0.330
Hexachlorobutadiene	0.330		0.330	3,3'-Dichlorobenzidine	0.330	U 0.330
4-Chloro-3-methylphenol	0.330		0.330	Benzo(a)anthracene	0.330	บ 0.330
2-Methylnaphthalene	0.330		0.330	Chrysene	0.330	บ 0.330
Hexachlorocyclopentadiene	0.330		0.330	bis(2-Ethylhexyl)phthalate	0.330	U 0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.27	JB 0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	U 0.330
2-Chloronaphthalene	0.330		0.330	Benzo(k)fluoranthene	0.330	บ 0.330
2-Nitroaniline	0.825		0.825	Benzo(a)pyrene	0.330	U 0.330
Dimethylphthalate	0.330		0.330	<pre>Indeno(1,2,3-cd)pyrene</pre>	0.330	
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	
				Benzo(g,h,i)perylene	0.330	U 0.330

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1507

SAMPLE DATE: 10/21/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits					
Nitrobenzene-D5	73	23 - 120					
2-Fluorobiphenyl	85	30 - 115					
Terpnenyl-D14	83	18 - 137					
Phenol-D5	64	24 - 113					
2-Fluorophenol	84	25 - 121					
2,4,6-Tribromophenol	66	19 - 122					

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 89 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1507

SAMPLE DATE: 10/21/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 116.279

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	4.6	N	1.1	7060	11/09/93
Aluminum	9000	N*	23	6010	11/23/93
Barium	76	N*	23	6010	11/23/93
Beryllium	1.1		0.58	6010	11/23/93
Cadmium	0.58	U	0.58	6010	11/23/93
Chromium	13		1.2	6010	11/23/93
Copper	9.8		2.9	6010	11/23/93
Iron	13000	N*	12	6010	11/23/93
Nickel	20	N	4.7	6010	11/23/93
Lead	8.6	N	0.33	7421	11/09/93
Mercury	0.022	ט	0.022	7471	11/06/93
Silver	1.2	U	1.2	6010	11/23/93
Zinc	25		2.3	6010	11/23/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1508
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 10/31/93
DILUTION FACTOR: 1.0

UNITS: UG/L

		R	eporting				Re	porti
	Result	Qual	Limit		Result	Qua.	L	Limit
Chloromethane	1	0 U	10	1,2-Dichloropropane		5	U	
Bromomethane				· · ·			-	5
	_			trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	1	0 υ	10	Trichloroethene		5	U	5
Chloroethane	1	0 U	10	Chlorodibromomethane		5	U	5
Methylene chloride	1	υ 0	10	1,1,2-Trichloroethane		5	U	5
Acetone	10	0 U	100	Benzene		5	Ū	5
Carbon disulfide	:	5 U	5	cis-1,3-Dichloropropene		5	U	5
1.1-Dichloroethene	!	5 U	5	2-Chloroethylvinyl ether	:	LO	Ū	10
-Dichloroethane	!	5 ช	5	Bromoform		5	U	5
_ans-1,2-Dichloroethene		5 ປ	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene		5 U	5	4-Methyl-2-pentanone	9	50	U	50
Chloroform	:	5 ປ	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	:	5 U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	υ 0	100	Toluene		5	U	5
1,1,1-Trichloroethane	!	5 U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	!	5 U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	0 U	10	Styrene		5	U	5
Dichlorobromomethane	!	5 U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	93	88 - 110
BROMOFLUOROBENZENE	98	86 - 115
1,2-DICHLOROETHANE-D4	102	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-300

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method	
Test Name	Ref	Result	Limit	Units	Analyzed	Reference	
Chromium VI		0.0100	0.010	MG/KG	11/02/93	EPA7196	

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/03/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

				porting				Re	porti
	Result	Qual		Limit		Result	Qua:	1	Limit
Chloromethane		10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane		10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride		10	U	10	Trichloroethene		5	U	5
Chloroethane		10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride		10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	10	00	U	100	Benzene		5	U	5
Carbon disulfide		5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5	U	5	2-Chloroethylvinyl ether	:	LO	U	10
'Dichloroethane		5	U	5	Bromoform		5	U	5
ans-1,2-Dichloroethene		5	U	5	2-Hexanone	5	50	U	50
cis-1,2-Dichloroethene		5	U	5	4-Methyl-2-pentanone	5	0	U	50
Chloroform		5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	3.	.1	J	100	Toluene		5	U	5
1,1,1-Trichloroethane		5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	:	10	U	10	Styrene		5	U	5
Dichlorobromomethane		5	U	5	Xylenes, total		5	υ	5

Surrogates	% Recovery	Limits				
TOLUENE-D8	97	81 - 117				
BROMOFLUOROBENZENE	96	74 - 121				
1,2-DICHLOROETHANE-D4	102	70 - 120				

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 10/29/93
ANALYSIS DATE: 11/02/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			F	Report
R	esult	Qual	Limit		Result	Qual	Limi
		-					
Phenol	0.330	_	0.330	2,6-Dinitrotoluene	0.330		0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.825		0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330		0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.82		0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.82		0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.330		0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.330		0.330
2-Methylphenol	0.330		0.330	Diethylphthalate	0.330		0.330
3(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether			0.330
Methylphenol	0.330		0.330	Fluorene	0.330		0.330
N-Nitroso-di-n-propylamine	0.330		0.330	4-Nitroaniline	0.829		0.825
Hexachloroethane	0.330		0.330	4,6-Dinitro-2-methylphenol			0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)			0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330		0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330		0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825		0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	ט כ	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	ט כ	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	ט כ	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	ט כ	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	ט כ	0.330
4-Chloroaniline	0.330	υ	0.330	Butylbenzylphthalate	0.330	ט כ	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	ט כ	0.330
4-Chloro-3-methylphenol	0.330	υ	0.330	Benzo(a)anthracene	0.330	ט כ	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	ט כ	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	ט כ	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.14	ı u	0.330
2,4,5-Trichlorophenol	0.825	υ	0.825	Benzo(b)fluoranthene	0.330	ט כ	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	ט כ	0.330
2-Nitroaniline	0.825	ט	0.825	Benzo(a)pyrene	0.330	ט כ	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	ט כ	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	ט כ	0.330
				Benzo(g,h,i)perylene	0.330	ט כ	0.330

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: .D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 work order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	81	23 - 120				
2-Fluorobiphenyl	80	30 - 115				
Terphenyl-D14	89	18 - 137				
Phenol-D5	66	24 - 113				
2-Fluorophenol	66	25 - 121				
2,4,6-Tribromophenol	78	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 95 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 1.00000

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	U	0.010	7060	11/09/93
Aluminum	0.20	U	0.20	6010	11/23/93
Barium	0.20	บ	0.20	6010	11/23/93
Beryllium	0.0050	Ū	0.0050	6010	11/23/93
Cadmium	0.0050	U	0.0050	6010	11/23/93
Chromium	0.010	Ü	0.010	6010	11/23/93
Copper	0.025	U	0.025	6010	11/23/93
Iron	0.10	U	0.10	6010	11/23/93
Nickel	0.040	Ŭ	0.040	6010	11/23/93
Lead	0.0030	Ŭ	0.0030	7421	11/09/93
Mercury	0.00020	U	0.00020	7471	11/06/93
Silver	0.010	U	0.010	6010	11/23/93
Zinc	0.020	U	0.020	6010	11/23/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN. TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #2

SAMPLE DATE:

SAMPLE MATRIX: SOIL ANALYSIS DATE: 11/03/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

			eporting				Re	porti
	Result	Qual	Limit		Result	Qual	L	Limit
Chloromethane	1	.0 ט	10	1,2-Dichloropropane		5	U	5
Bromomethane	1	. 0 .	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	1	.0 ע	10	Trichloroethene		5	U	5
Chloroethane	1	.0 ט	10	Chlorodibromomethane		5	U	5
Methylene chloride	0.	7 J	10	1,1,2-Trichloroethane		-	U	5
Acetone	5.	3 ј	100	Benzene		-	U	5
Carbon disulfide		5 U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5 U	5	2-Chloroethylvinyl ether	•	10	U	10
'-Dichloroethane		5 U	5	Bromoform			U	5
ans-1,2-Dichloroethene		5 U	5	2-Hexanone		50	Ū	50
cis-1,2-Dichloroethene		5 U	5	4-Methyl-2-pentanone	9	50	U	50
Chloroform		5 U	5	Tetrachloroethene			U	5
1,2-Dichloroethane		5 U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	2.	6 ј	100	Toluene		5	U	5
1,1,1-Trichloroethane		5 ປ	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5 ປັ	5	Ethylbenzene		5	Ū	5
Vinyl acetate	1	0 U	10	Styrene		5	U	5
Dichlorobromomethane		ט 5	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits			
TOLUENE-D8	102	81 - 117			
BROMOFLUOROBENZENE	98	74 - 121			
1,2-DICHLOROETHANE-D4	105	70 - 120			

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #3

SAMPLE DATE:

SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/04/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		Re	eporting				Re	porti
	Result Qua	1	Limit		Result	Qua.	L	Limit
Chloromethane	10	ָּט	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	IJ	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	3.2	J	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	1	LO	U	10
`-Dichloroethane	5	U	5	Bromoform		5	U	5
.ans-1,2-Dichloroethene	5	U	5	2-Hexanone	5	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	5	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits				
TOLUENE-D8	100	81 - 117				
BROMOFLUOROBENZENE	97	74 - 121				
1,2-DICHLOROETHANE-D4	99	70 - 120				

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 98 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-300

SAMPLE ID: LAB BLANK

SAMPLE DATE:

SAMPLE MATRIX: WATER

	Note	Reporting			Date	Method
Test Name	<u>Ref</u>	Result	Limit	Units	Analyzed	Reference
TPH - IR		1.00	1.0	MG/L	11/05/93	EPA418 1
Chromium VI		0.0100	0.010	MG/L	10/22/93	EPA7196

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-300

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK SAMPLE DATE: not spec SAMPLE MATRIX: WATER ANALYSIS DATE: 10/31/93 DILUTION FACTOR: 1.0

UNITS: UG/L								
		Re	eporting				Rep	orti
	Result Qua	al	Limit		Result	Qual	. Ī	imit
Chloromethane	10	ប	10	1,2-Dichloropropane		5	U	-
Bromomethane	10	U	10	trans-1,3-Dichloropropene		-	U	
Vinyl chloride	10	บ	10	Trichloroethene		_	U	5 E
Chloroethane	10	U	10	Chlorodibromomethane		_	U	5 E
Methylene chloride	11		10	1,1,2-Trichloroethane		_	Ū	5
Acetone	100	U	100	Benzene			U	5
Carbon disulfide	5	Ū	5	cis-1,3-Dichloropropene		_	U	5
1,1-Dichloroethene	5	Ū	5	2-Chloroethylvinyl ether	-	_	U	10
'-Dichloroethane	5	U	5	Bromoform	-		U	5
ans-1,2-Dichloroethene	5	U	5	2-Hexanone		_	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	_	-	U	50
Chloroform	5	Ū	5	Tetrachloroethene		_	U	5
1,2-Dichloroethane	5	Ū	5	1,1,2,2-Tetrachloroethane		_	U	5
2-Butanone	100	U	100	Toluene		_	U	5
1,1,1-Trichloroethane	5	Ū	5	Chlorobenzene		_	U	5
Carbon tetrachloride	5	ע	5	Ethylbenzene		-	U	5
*** = 1	•	-	_			_	_	

Surrogates	% Recovery	Limits
TOLUENE-D8	97	88 - 110
BROMOFLUOROBENZENE	95	86 - 115
1,2-DICHLOROETHANE-D4	101	76 - 114

10

5

Styrene

Xylenes, total

Data Qualifier Key:

Vinyl acetate

Dichlorobromomethane

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
 - * Surrogate recovery is outside QC limit

10

5

U

U

- D compound identified at a secondary dilution factor
- E concentration exceeds calibration range

5

5

U

Page: 100 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER
EXTRACTION DATE: 10/29/93

ANALYSIS DATE: 11/04/93
DILUTION FACTOR: 1.0
UNITS: UG/I.

UNITS: UG/L		R	eporting			I	Report
	Result	Qual	Limit		Result	Qual	Limi
						_	
Phenol	1		10	2,6-Dinitrotoluene	10	U (10
bis(2-Chloroethyl)ether	1	0 υ	10	3-Nitroaniline	2	ט כ	25
2-Chlorophenol	1		10	Acenaphthene	10	ט כ	10
1,3-Dichlorobenzene	1	0 υ	10	2,4-Dinitrophenol	2	U	25
1,4-Dichlorobenzene	1.	4 J	10	4-Nitrophenol	2	U	25
Benzyl alcohol	1	υ 0	10	Dibenzofuran	10	U (10
1,2-Dichlorobenzene	1	ט ס	10	2,4-Dinitrotoluene	10	U (10
2-Methylphenol	1	ט ס	10	Diethylphthalate	10	U (10
(2-Chloroisopropyl)eth	er 1	υ σ	10	4-Chlorophenyl-phenylether	10	U	10
Methylphenol	10	ט כ	10	Fluorene	10	ט (10
N-Nitroso-di-n-propylamine	2 1	U C	10	4-Nitroaniline	10	U	10
Hexachloroethane	10	U C	10	4,6-Dinitro-2-methylphenol	. 25	U	25
Nitrobenzene	10	υ 0	10	N-Nitrosodiphenylamine (1)		υ (10
Isophorone	10	ט כ	10	4-Bromophenyl-phenylether	10	ט (10
2-Nitrophenol	10	υ 0	10	Hexachlorobenzene	10	ט (10
2,4-Dimethylphenol	10	ט כ	10	Pentachlorophenol	25	ט	25
Benzoic Acid	10	ט כ	10	Phenanthrene	10	ט י	10
bis(2-Chloroethoxy)methane	1 (ט כ	10	Anthracene	10	U	10
2,4-Dichlorophenol	10	ט כ	10	Di-n-butylphthalate	10	ט י	10
1,2,4-Trichlorobenzene	10	ט כ	10	Fluoranthene	10		10
Naphthalene	10	ט כ	10	Pyrene	10	_	10
4-Chloroaniline	10	U	. 10	Butylbenzylphthalate	10	_	10
Hexachlorobutadiene	10	U C	10	3,3'-Dichlorobenzidine	10	_	10
4-Chloro-3-methylphenol	10	ט כ	10	Benzo(a)anthracene	10	_	10
2-Methylnaphthalene	10	ט כ	10	Chrysene	10	_	10
Hexachlorocyclopentadiene	10	U	10	bis(2-Ethylhexyl)phthalate		_	10
2,4,6-Trichlorophenol	10	υ (10	Di-n-octylphthalate	10	_	10
2,4,5-Trichlorophenol	10	U	10	Benzo(b)fluoranthene	10	_	10
2-Chloronaphthalene	10) U	10	Benzo(k)fluoranthene	10		10
2-Nitroaniline	25	. U	25	Benzo(a)pyrene	10	-	10
Dimethylphthalate	10	ט (10	Indeno(1,2,3-cd)pyrene	10	•	10
Acenaphthylene	10		10	Dibenzo(a,h)anthracene	10	-	10
		_		Benzo(g,h,i)perylene	10	_	10
				(3// ±/Porl rome	10	-	10

Page: 101 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 work Order: B3-10-300

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK SAMPLE DATE: not spec SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	68	35 - 114
2-Fluorobiphenyl	75	43 - 116
Terphenyl-D14	89	33 - 141
Phenol-D5	65	10 - 94
2-Fluorophenol	67	21 - 100
2.4.6-Tribromophenol	67	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 102 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER

DILUTION FACTOR (6010): 1.0

UNITS: MG/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010		0.010	7060	11/12/93
Aluminum	0.20	υ	0.20	6010	11/16/93
Barium	0.20	บ	0.20	6010	11/16/93
Beryllium	0.0050	U	0.0050	6010	11/16/93
Cadmium	0.0050	บ	0.0050	6010	11/16/93
Chromium	0.010	U	0.010	6010	11/16/93
Copper	0.025	U	0.025	6010	11/16/93
Iron	0.10	U	0.10	6010	11/16/93
Nickel	0.040	บ	0.040	6010	11/16/93
Lead	0.0030	บ	0.0030	7421	11/11/93
Mercury	0.00020	บ	0.00020	7471	11/08/93
Silver	0.010	บ	0.010	6010	11/16/93
Zinc	0.020	Ū	0.020	6010	11/16/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Page: 103 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-300

SAMPLE ID: LAB BLANK #2

SAMPLE DATE:

SAMPLE MATRIX: SOIL

-	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	 Analyzed	Reference
Chromium VI		0.0100	0.010	MG/KG	11/03/93	EPA7196

Page: 104 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-300

IV. Methodology

Requested analyses were performed according to the following methods.

TEST NAME TPH - IR

TEST CODE 418 1

418 1

Method 418.1: Total Recoverable Petroleum Hydorcarbons, infrared spectrophotmetric method. Methods for the chemical analysis of water and wastes. USEPA.

TEST NAME ICP Metals

TEST CODE 6010

Metals by ICP

Inductively coupled emission spectroscopy according to Method 6010, "Test Methods for Evaluating Solid Waste Physical/Chemical Methods", SW-846, Third Edition.

TEST NAME Hazardous Substance Vols. TEST CODE 8240TK

List Volatiles

Hazardous Substance Method 8240, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. GC/MS Purge and Trap analysis.

TEST NAME ABN HSL GC/MS Extractables TEST CODE 8270TK

Hazardous Substance List Extractables

Method 8270, SW-846, Test Methods for Evaluating Solid Waste, Third Edition. Acid/Base-Neutral extraction followed by GC/MS analysis.

TEST NAME Arsenic - Graphite Furnace TEST CODE AS GF

Arsenic

Graphite Furnace

Method 7060, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. EPA 206.2-Technical Additions to Methods for Chemical Analysis of Water and Wastes,

EPA-600/4-82-055, December 1982.

TEST NAME Chromium VI

TEST CODE CR VI

Chromium VI

Method 7196, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Colorimetric analysis. Equivalent to Standard Methods 3500-Cr D.

Page: 105 of 106

Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 Work Order: B3-10-300

TEST NAME Mercury

TEST CODE HG AA

Mercury

Method 7471, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Cold vapor atomic absorption.

Method 7470 is used for water.

Method 245.5-"Technical Additions to Methods for

Chemical Analysis of Water and Wastes,"

EPA-600/4-82-055, December 1982.

TEST NAME Metals

TEST CODE ICPTK2

Method not available.

TEST NAME Lead - Graphite Furnace

TEST CODE PB GF

Lead

EPA 7421, SW-846, Test Methods for Evaluating Solid

Graphite Furnace

Wastes, Third Edition.

EPA 239.2-Technical Additions to Methods for Chemical

Analysis of Water and Wastes, " EPA-600/4-82-055,

December 1982.

TEST NAME ICPES Digestion - Water

TEST CODE Z3005

Water Digestion

Method 3005A, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Digestion procedure for the preparation of surface and ground water samples for analysis by flame atomic absorption spectroscopy and inductively coupled plasma spectroscopy. The procedure

determines total recoverable or dissolved metals.

TEST NAME GFAA Digestion - Water

TEST CODE Z3020

Water Digestion

Method 3020, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for

Graphite Furnace.

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Company: IT CORPORATION

Date: 12/06/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-300

TEST NAME GFAA Digestion - Soil

TEST CODE 23050F

Soil Digestion

Method 3050, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for

Graphite Furnace/Flame AA analysis.

TEST NAME ICPES Digestion - Soil

TEST CODE Z3050P

Soil Digestion

Method 3050, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for ICPES analysis. Equivalent to Method 3050A, SW-846 Update I, July 1992.



ANALYSIS REQUEST AND *

Reference Document No. 314070 Page 1 of 2

<u>5</u>	MCA 3/15/91								
									Comments: 29
<u> </u>		Date: Time:	ived by	3. Received by (Signature/Affiliation)	1	Date: Time:			3. Relinquished by (Signature/Affiliation)
SI		Date: Time:	ived by	2. Received by (Signature/Affiliation)		Date: Time:	10 10		2. Relinquished by [Signature/Affiliation]
מחכמסו	10/22/23	Date:	1. Received by 28 // Signature / Affiliation / Live Line & Mu	1. Received by (Signature/Affiliation).	27-93	Date: 10 Time: 15	7	MARIE	1. Relinquished by 28 (Signature/Affiliation)
SULIP!		·	Project Specific (specify):	27 III. L	OC Level: 27		ļ	Required: ²⁶	Turnaround Time Required: 26 Normal XI Rush!
oer spec	(mos.	Disposal by Lab	Sample Disposal: ²⁵ Return to Client Dispo	×	Unknown 🔏	Poison B .	24 Skin Irritant : P	1	Possible Hazard Identification: Non-hazard J Flammable J
L								s: 23	Special Instructions: 23
ו וח אי									
l Dec as			0003/0Ecs		500		10-21-93		A10/6
100		F P	8240		125		10-21-93 0828		A10/6
<u> </u>		T Q	8270/6000		500		0830		37014
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CODA			8270/600		520		18-21-95		11011
DISIT .		1000	8240	2007	125	-	0800	50;	A1014
MORE	6324410A	bood loc	M 824	COOL 7	s 40ml	Sages	1700	water	AKY3
1	Disposal ²² Record No.	Condition on ²¹ Receipt	Requested Testing 20 Program		er 17 Sample 18 Volume	16 Container 17	를 될 기를	Sample 15 Description/Type	Sample 14 Number
] Saidi i i			PER LINE	CONTAINER		3NO		te 11 /5 Day 5	Required Report Date 11 /5 Day S
es ynedn	53-414 5 5414	TI- Mis	ject Contact/Phone 12 405-336-3366 Report to: 10 Carrier/Waybill No. 13/1846075543	13 F/8	Project Contact/Phone 12	oject Cont Carrier/	50	Project Manager 1 immy Taxor Purchase Order No. 6 409837-03 pg	Project Manag Purchase Order N
			THEIR DRAME	_	Lab Contact 9	_		03 3577	Profit Center No. 3
: ::::::::::::::::::::::::::::::::::::	β/ -01	0.0.570700.0.57	AS-ANSON BILLOS	HLT BU	Samples Shipment Date $\frac{1}{2}$ Lab Destination $\frac{8}{2}$	nples Ship Lab	Sar Gordon Kirschenmann	2 Andre	Project Name/No. ' Sample Team Members 2
ILAA	<u> </u>	5 1/1/6777 >>		•	, !	0	107837.03-01	74/8-75	CORFORALION



ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.30 3/4070 Page 2_of 2_

Project No. 409832.03.01-520/ Samples Shipment Date 1021-93

ONE CONTAINER PER LINE

					/		
(,						
	8270/00	*	500	X	10-21-93	X -	A1071
100 A	82%		125		1435 1435		A1021
	8276/600		500		1430		A1030
	8240		125		14/30		141020
**************************************	8270/600		888		14/20		A1019/mg/mas)
	8240	Cash	125	Clear	1420	50:	19/019/ms/00)
1. A	8270	1887 1888	12	Anber	5/1/2/01	Water	SKAL
	6000	(86). (80).	250ml	BY	1415	water	ANO/8
S Rues	8240	1007 148	40ml	Clear	121-83	Water	ANS
Mioliles 1	8270/600	COOL	SOM	(1410	-	A017
Good 1°C	8240	CO01		5 glas 12	0141		A1017
20 Condition on 21 Disposal 22 Receipt Record No.	Requested Testing Program	pre-19 servative	Sample 18 Volume	Container 17 Type	Date/Time ¹⁶ Collected	Sample 15 Description/Type	Sample 14 Number

MCA 3/15/91



ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 514065 Page 1 of A

Profit Center No 3 3527	Sample Team Members 2 L. Rodingues/ 11. Wilson	Project Name/No. 17NFD 459832
Lab Contact 9 Karmen Dean	Lal	Samples Shipment Date 7 10/21/93

Report to: 10 Ting Jennings

White: To accompany samples

Yellow: Field copy

Purchase Order No. 6 409822,002 Project Manager & Jimmy Tany los ンナット Project Contact/Phone 12 Dan McGsegses Carrier/Waybill No. 13 Feb E. 8460755483

755483 Report to: 10 Tim Jennings

						_		
		٠						Comments: 29
	Time:	Affiliation)	(Signature/Affiliation	:	lme:	=1		(Signature/Affiliation)
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	Time:	Affiliation)	(Signature/Affiliation)	!	Time:	= C	J y	(Signature/Affiliation)
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1560	Date: Time:	1. Received by 28 (Signature/Affiliation)	1. Received to (Signature / Affiliation)	Ct3	Date: 10/31/43 Time: 1921		1. 1.); le	1. Relinquished by 28 (Signifum / Affiliation // Af
		Project Specific (specify):		=	 -			Normal 14 Rush
			: 27	QC Level: 27	Ø		ne Required: ²⁶	Turnaround Time Required: 26
(mos.)	Disposal by Lab	Sample Disposal: 23 Return to Client Disp	¥ X X	Linknown X	Poison B	24 Skin Irritant _ . P	Possible Hazard Identification: 24 Non-hazard Flammable Skin Irr	Possible Hazaro
				,			ions: 23	Special Instructions:
		6010 / 7000	1	500ml	;	56/16/01	5B-017 Duplicate	A 1503
		BON OHES	11	135ml	1,	56/16/01	50 -017 Duplicate	A 1503
		0007/0/02	"	500 m	1	10/31/93	5B-017 Soil	1
		AON OHES	1	125ml	=	10/21/93	5B-017 Soil	A ISOA
		0.02.70109	2	500m	:	CP/16/01	5B-016 Soil	A 1501
¥ . Y	9	ROU OHES	, ,,	125m	Class	10/21/93	SB-016 Soil	A 1501
13	he was	8370/7000	M (COO)	.Scom1	Clear Glass	10/31/93	1,08 510- BG	A 1500
	Good I'c	AON OHE &	1 (00)	ldsml	clear	10/21/93	1:05 SIO- ELS	A 1500
Disposal ²² Record No.	Condition on ²¹ Receipt	Requested Testing 20 Program	18 pre- 19 servative	7Sample Volume	⁶ Container ¹⁷ Sample ¹⁸ Type Volume	Date/Time ¹⁶ Collected	Sample ¹⁵ Description/Type	Sample ¹⁴ Number
		PER LINE	CONTAINER	CONT	ONE		Date 11 NTAT	Required Report Date 11

*See back of form for special instructions.

MCA 3/15/91



ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.30 314065 Page 2 of 2

Project Name Tintres 5001

Project No. 409 832

Samples Shipment Date ___ [0/2! [43 ___

MCA 3/15/91								
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S)	(7) (2) (3)							
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	7 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3				(•	
B3244100 A	-	200 MES	HCI	40ml	Cleon 4/055	1700	Trip Blonk	A 1508
		themonal/anse	// //	500m1	1/	802 1	SB-000 Seil	A 1507
D) pia		_	//	1.35ml	"	10/21/13	انعک 200 کار	A 1507
H :W0		8270 SUCC 8010 / 7000 melodo	" "	500 ml	= "	1650	108 100- 95	
		san ohes		[25m]	5/058 Col 60-1	0.59/ 61/16/01	SB -019 Soil	A 1506
Se		6010/7000	1 (001	500m	Creon	1600 1600	5B .018 Soil	A 1505
Idwes	1RV2			125m1	cleon Glass	1600	5B - 018 Soil	1
ZZ/BA/M		8270 Suoc	(60)	2.56	Ambes	15/31/93	11 11	4 1504
wooo	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	6010/7000 Metals	250ml HWO3	À50,	Plostic	1505	11 11	L
	0,	BOYO VOA	ИСТ	100ml	Clear	1505	Egpt. Rinsote	A 1504
Disposal 22 Record No.	Condition on 21 Receipt	Requested Testing 20 Program	18 Pre-19 servative	Volume	Container 17 Type	Date/Time ¹⁶ Collected	Sample 15 Description/Type	Sample 14 Number
		PER LINE	CONTAINER		ONE			

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
02B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	100
	Chromium VI	B310300-21B	1102CR_VI1	11/02/93	11/02/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	102
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	100

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
03в						
	Arsenic	B310300-21B	11053050F1	03/05/94	11/09/93	97
	Chromium VI	B310300-21B	1102CR_VI1	11/02/93	11/02/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	114
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	97

Work order : B310300

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
04B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	97
	Chromium VI	B310300-21B	1102CR VI1	11/02/93	11/02/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	109
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	97

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
05B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	102
	Chromium VI	B310300-21B	1102CR VI1	11/02/93	11/02/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	116
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	408

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
06B						
1	Arsenic	B310300-24B	110930201	11/09/93	11/12/93	1.0
1	Mercury	B310300-24B	1108HGAA1	11/08/93	11/08/93	1.0
4	418_1	B310300-24B	1103TPHIR1	11/03/93	11/05/93	1.0
I	Lead	B310300-24B	110930201	11/09/93	11/11/93	1.0

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
07B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	115
	Chromium VI	B310300-21B	1102CR VI1	11/02/93	11/02/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	120
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	460

Sample ID : A1019-MS

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
08B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	430
	Chromium VI	B310300-21B	1102CR_VI1	11/02/93	11/02/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	106
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	430

Sample ID : A1019-MSD

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
09B						-
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	377
	Chromium VI	B310300-21B	1102CR_VI1	11/02/93	11/02/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	112
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	377

Work order : B310300

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
10B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	105
	Chromium VI	B310300-25A	1103CR_VI1	11/03/93	11/03/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	103
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	105

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
11B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	103
	Chromium VI	B310300-25A	1103CR VI1	11/03/93	11/03/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	109
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	103

Work order : B310300

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
12B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/10/93	543
	Chromium VI	B310300-21B	1102CR VI1	11/02/93	11/02/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	104
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	109

Work order : B310300

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
13B						
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	92.6
	Chromium VI	B310300-21B	1102CR_VI1	11/02/93	11/02/93	10.0
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	118
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	370

Work order : B310300

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
14B	Arsenic Chromium VI Mercury Lead	B310300-21B B310300-25A B310300-21B B310300-21B	11053050F1 1103CR_VI1 1106HGAA1 11053050F1	11/05/93 11/03/93 11/06/93 11/05/93	11/03/93 11/06/93	106 10.0 104 106

Work order : B310300

FRAC	Tests	Blank Tests Reference		Prep Date	Analysis Date	Dil. Factor	
15B						116	
	Arsenic	B310300-21B	11053050F1	03/25/94	•		
	Chromium VI	B310300-25A	1103CR_VI1	11/03/93	• •		
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	119	
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	116	

Work order : B310300

FRAC Tests		Blank	Batch	Prep	Analysis	Dil.	
		Reference	ID	Date	Date	Factor	
16B	Arsenic Chromium VI Mercury Lead	B310300-24B B310300-24B B310300-24B B310300-24B	110930201 1022CR_VI1 1108HGAA1 110930201	11/09/93 10/22/93 11/08/93 11/09/93	10/22/93 11/08/93	1.0 1.0 1.0	

Work order : B310300

FRAC	Tests	Blank Tests Reference		Prep Date	Analysis Date	Dil. Factor	
17B							
1/5	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	104	
	Chromium VI	B310300-25A	1103CR VI1	11/03/93	11/03/93	10.0	
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	116	
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	104	

Work order : B310300

FRAC	Tests	Blank Tests Reference		Prep Date	Analysis Date	Dil. Factor	
18B		2210200 01P	1105205081	11 /05 /03	11/09/93	92.6	
	Arsenic Chromium VI Mercury	B310300-21B B310300-25A B310300-21B	11053050F1 1103CR_VI1 1106HGAA1	11/05/93 11/03/93 11/06/93	11/03/93	10.0	
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	370	

Work order : B310300

FRAC	Tests	Blank Tests Reference		Prep Date	Analysis Date	Dil. Factor	
19B							
130	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	111	
	Chromium VI	B310300-25A	1103CR VI1	11/03/93	11/03/93	10.0	
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	112	
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	111	

Sample ID : LAB BLANK #1

FRAC Tests		Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor	
21B							
	Arsenic	B310300-21B	11053050F1	11/05/93	11/09/93	1.0	
	Chromium VI	B310300-21B	1102CR VI1	11/02/93	11/02/93	1.0	
	Mercury	B310300-21B	1106HGAA1	11/06/93	11/06/93	1.0	
	Lead	B310300-21B	11053050F1	11/05/93	11/09/93	1.0	

Work order : B310300

Sample ID : LAB BLANK

FRAC	Tests	Blank ests Reference		Prep Date	Analysis Date	Dil. Factor	
24B							
	Arsenic	B310300-24B	110930201	11/09/93	;	1.0	
	Chromium VI	B310300-24B	1122CR_VI1	10/22/93	10/22/93	1.0	
	Mercury	B310300-21B	1108HGAA1	11/08/93	3	1.0	
	Lead	B310300-24B	110930201	11/09/93	1	1.0	

Work order : B310300

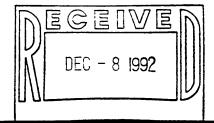
Sample ID : LAB BLANK #2

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
25A C	hromium VI	B310300-25A	1103CR_VI1	11/03/93	11/03/93	1.0

Rowled to K- CF. 7L 12/9/93



ANALYTICAL SERVICES



CERTIFICATE OF ANALYSIS

IT CORPORATION 1250 CAPITAL OF TX HWY BLDG. 3, SUITE 200 AUSTIN, TX 78746-6443 TIM JENNINGS

Work Order: B3-10-313

This is the Certificate of Analysis for the following samples:

Client Work ID: D.O.5001
Date Received: 10/25/93
Number of Samples: 11
Sample Type: WATER

409832-003-01

Date: 12/04/93

I. Introduction

Samples were labeled as follows:

SAMPLE IDENTIFICATION	LABORATORY #
A1509	B3-10-313-01
A1510	B3-10-313-02
A1511	B3-10-313-03
A1512	B3-10-313-04
A1513	B3-10-313-05
A1514	B3-10-313-06
A1515	B3-10-313-07
A1516	B3-10-313-08
LAB BLANK #1	B3-10-313-09
LAB BLANK #2	B3-10-313-10
TAR BLANK #3	B3-10-313-11

Reviewed and Approved:

Jon Bartell

Laboratory Director

Page: 2 of 42

Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

II. QA/QC

The results presented in this report meet the statement of work requirements in accordance with Quality Control and Quality Assurance protocol except as noted in Section IV or in an optional sample narrative at the end of Section III.

In the presented analytical data, 'ND' or '<' indicates that the compound is not detected at the specified limit.

III. Analytical Data

The following page(s) supply results for requested analyses performed on the samples listed above.

The test results relate to tested items only. ITAS-Austin reserves the right to control report production except in whole.

Page: 3 of 42

Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-313

SAMPLE ID: A1509

SAMPLE DATE: 10/22/93 10:17:00

SAMPLE MATRIX: WATER

	Note	1	Reporting		Date	Method
Test Name	Ref	Result	<u> Limit</u>	Units	Analyzed	Reference
TPH - IR		1.00	1.0	MG/L	11/10/93	EPA418_1
Total Organic Carbon		17	5.0	MG/L	11/11/93	EPA415_1

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1509
SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 10/31/93
DILUTION FACTOR: 1.0

UNITS: UG/L

UNITS: UG/L		ъ-					Re	porting
			porting		Result	Oual	-	Limit
	Result Qu	al	Limit		Kesare	Yuu-		
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
	10	U	10	trans-1,3-Dichloropropene		5	U	5
Bromomethane		U	10	Trichloroethene		5	U	5
Vinyl chloride	10	_		Chlorodibromomethane		5	U	5
Chloroethane	10	U	10			5	U	5
Methylene chloride	6.7	BJ	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		_	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	-	
1.1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
-Dichloroethane	5	U	5	Bromoform		5	U	5
Lans-1,2-Dichloroethene	5	ប	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		50	U	50
	5	U	5	Tetrachloroethene		5	U	5
Chloroform	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
1,2-Dichloroethane						5	U	5
2-Butanone	100	U	100	Toluene		5	Ū	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		-	_	5
Vinyl acetate	10	U	10	Styrene		5	U	_
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	95	88 - 110
BROMOFLUOROBENZENE	96	86 - 115
1,2-DICHLOROETHANE-D4	97	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 5 of 42

Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-313

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1509
SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER

EXTRACTION DATE: 10/27/93 ANALYSIS DATE: 11/05/93 DILUTION FACTOR: 1.0

Pheno1	UNITS: UG/L		Re	porting				Reportin
Description		ult Ç		-		Result	Qua.	Limit
Description								
10	Phenol	10	U	10	2,6-Dinitrotoluene			
1,3-Dichlorobenzene	bis(2-Chloroethyl)ether	10	U	10	3-Nitroaniline			
1,4-Dichlorobenzene	2-Chlorophenol	10	U	10	Acenaphthene		. •	
	1,3-Dichlorobenzene	10	U	10	2,4-Dinitrophenol		_	
10	1,4-Dichlorobenzene	1.0	JB	10				
2-Methylphenol	Benzyl alcohol	10	U	10				
(2-Chloroisopropyl)ether	1,2-Dichlorobenzene	10	U	10	2,4-Dinitrotoluene			
(2-Unifolisopyly)ether 10 U 10 Fluorene 10 U 10 N-Nitroso-di-n-propylamine 10 U 10 4-Nitroaniline 10 U 10 Hexachloroethane 10 U 10 4,6-Dinitro-2-methylphenol 25 U 25 Nitrobenzene 10 U 10 N-Nitrosodiphenylamine (1) 10 U 10 Isophorone 10 U 10 N-Nitrosodiphenylamine (1) 10 U 10 2-Nitrophenol 10 U 10 Hexachlorobenzene 10 U 10 2,4-Dimethylphenol 10 U 10 Pentachlorophenol 25 U 25 Benzoic Acid 10 U 10 Phenanthrene 10 U 10 2,4-Dichlorophenol 10 U 10 Anthracene 10 U 10 1,2,4-Trichlorobenzene 10 U 10 Fluoranthene 10 U	2-Methylphenol	10	U	10				
N-Nitroso-di-n-propylamine	(2-Chloroisopropyl)ether	10	U	10	4-Chlorophenyl-phenylether			
Nexachloroethane	ethylphenol	10	U	10	Fluorene			
Next	N-Nitroso-di-n-propylamine	10	U	10	4-Nitroaniline			
Isophorone	Hexachloroethane	10	U	10	4,6-Dinitro-2-methylpheno		-	
2-Nitrophenol 10 U 10 Hexachlorobenzene 10 U 10	Nitrobenzene	10	U	10	N-Nitrosodiphenylamine (1)	•		
2,4-Dimethylphenol 10 U 10 Pentachlorophenol 25 U 25 Benzoic Acid 10 U 10 Phenanthrene 10 U 10 bis(2-Chloroethoxy)methane 10 U 10 Anthracene 10 U 10 2,4-Dichlorophenol 10 U 10 Di-n-butylphthalate 10 U 10 1,2,4-Trichlorobenzene 10 U 10 Fluoranthene 10 U 10 Naphthalene 10 U 10 Pyrene 10 U 10 Hexachlorobutadiene 10 U 10 Butylbenzylphthalate 10 U 10 Hexachlorobutadiene 10 U 10 Benzo(a)anthracene 10 U 10 2-Methylnaphthalene 10 U 10 Benzo(a)anthracene 10 U 10 Hexachlorocyclopentadiene 10 U 10 Di-n-octylphthalate 10 U 10 2,4,6-Trichlorophenol 10 U 10 Benzo(b)fluoranthene 10 U 10 2,4,5-Trichlorophenol 10 U 10 Benzo(b)fluoranthene 10 U 10 2-Chloronaphthalene 10 U 10 Benzo(b)fluoranthene 10 U 10 2-Nitroaniline 25 U 25 Benzo(a)pyrene 10 U 10 Dimethylphthalate 10 U 10	Isophorone	10	U	10	4-Bromophenyl-phenylether			
Senzoic Acid 10	2-Nitrophenol	10	U	10	Hexachlorobenzene			
bis(2-Chloroethoxy)methane 10 0 10 Anthracene 10 U 10 2,4-Dichlorophenol 10 U 10 Di-n-butylphthalate 10 U 10 1,2,4-Trichlorobenzene 10 U 10 Fluoranthene 10 U 10 Naphthalene 10 U 10 Pyrene 10 U 10 4-Chloroaniline 10 U 10 Butylbenzylphthalate 10 U 10 Hexachlorobutadiene 10 U 10 Benzo(a)anthracene 10 U 10 4-Chloro-3-methylphenol 10 U 10 Benzo(a)anthracene 10 U 10 2-Methylnaphthalene 10 U 10 Chrysene 10 U 10 Hexachlorocyclopentadiene 10 U 10 bis(2-Ethylhexyl)phthalate 10 U 10 2,4,6-Trichlorophenol 10 U 10 Benzo(b)fluoranthene 10 U 10 2,4,5-Trichlorophenol 10 U 10 <td< td=""><td>2,4-Dimethylphenol</td><td>10</td><td>U</td><td>10</td><td>Pentachlorophenol</td><td></td><td>_</td><td></td></td<>	2,4-Dimethylphenol	10	U	10	Pentachlorophenol		_	
2,4-Dichlorophenol 10 U 10 Di-n-butylphthalate 10 U 10 1,2,4-Trichlorobenzene 10 U 10 Fluoranthene 10 U 10 Naphthalene 10 U 10 Pyrene 10 U 10 4-Chloroaniline 10 U 10 Butylbenzylphthalate 10 U 10 Hexachlorobutadiene 10 U 10 Benzo(a)anthracene 10 U 10 2-Methylnaphthalene 10 U 10 Chrysene 10 U 10 Hexachlorocyclopentadiene 10 U 10 bis(2-Ethylhexyl)phthalate 10 U 10 2,4,6-Trichlorophenol 10 U 10 Di-n-octylphthalate 10 U 10 2,4,5-Trichlorophenol 10 U 10 Benzo(b)fluoranthene 10 U 10 2-Nitroaniline 25 U 25 Benzo(a)pyrene 10 U 10 Dimethylphthalate 10 U 10 Indeno(1,2,3	Benzoic Acid	10	U	10	Phenanthrene			
1,2,4-Trichlorobenzene 10 0 10 Fluoranthene 10 U 10 Naphthalene 10 U 10 Pyrene 10 U 10 4-Chloroaniline 10 U 10 Butylbenzylphthalate 10 U 10 Hexachlorobutadiene 10 U 10 Benzo(a)anthracene 10 U 10 4-Chloro-3-methylphenol 10 U 10 Benzo(a)anthracene 10 U 10 2-Methylnaphthalene 10 U 10 Chrysene 10 U 10 Hexachlorocyclopentadiene 10 U 10 bis(2-Ethylhexyl)phthalate 10 U 10 2,4,6-Trichlorophenol 10 U 10 Di-n-octylphthalate 10 U 10 2,4,5-Trichlorophenol 10 U 10 Benzo(b)fluoranthene 10 U 10 2-Nitroaniline 25 U 25 Benzo(a)pyrene 10 U 10 Dimethylphthalate 10 U 10 Indeno(1	bis(2-Chloroethoxy)methane	10	U	10	Anthracene			
Naphthalene 10 U 10 Pyrene 10 U 10 4-Chloroaniline 10 U 10 Butylbenzylphthalate 10 U 10 Hexachlorobutadiene 10 U 10 3,3'-Dichlorobenzidine 10 U 10 4-Chloro-3-methylphenol 10 U 10 Benzo(a)anthracene 10 U 10 2-Methylnaphthalene 10 U 10 Chrysene 10 U 10 Hexachlorocyclopentadiene 10 U 10 bis(2-Ethylhexyl)phthalate 10 U 10 2,4,6-Trichlorophenol 10 U 10 Di-n-octylphthalate 10 U 10 2,4,5-Trichlorophenol 10 U 10 Benzo(b)fluoranthene 10 U 10 2-Nitroaniline 25 U 25 Benzo(a)pyrene 10 U 10 Dimethylphthalate 10 U 10 Indeno(1,2,3-cd)pyrene 10 U 10	2,4-Dichlorophenol	10	U	10	Di-n-butylphthalate			
4-Chloroaniline 10 U 10 Butylbenzylphthalate 10 U 10 Hexachlorobutadiene 10 U 10 3,3'-Dichlorobenzidine 10 U 10 4-Chloro-3-methylphenol 10 U 10 Benzo(a)anthracene 10 U 10 2-Methylnaphthalene 10 U 10 Chrysene 10 U 10 Hexachlorocyclopentadiene 10 U 10 bis(2-Ethylhexyl)phthalate 10 U 10 2,4,6-Trichlorophenol 10 U 10 Di-n-octylphthalate 10 U 10 2,4,5-Trichlorophenol 10 U 10 Benzo(b)fluoranthene 10 U 10 2-Chloronaphthalene 10 U 10 Benzo(k)fluoranthene 10 U 10 2-Nitroaniline 25 U 25 Benzo(a)pyrene 10 U 10 Dimethylphthalate 10 U 10 Indeno(1,2,3-cd)pyrene 10 U 10	-	10	U	10	Fluoranthene			
Hexachlorobutadiene 10 U 10 3,3'-Dichlorobenzidine 10 U 10 4-Chloro-3-methylphenol 10 U 10 Benzo(a)anthracene 10 U 10 2-Methylnaphthalene 10 U 10 Chrysene 10 U 10 Hexachlorocyclopentadiene 10 U 10 bis(2-Ethylhexyl)phthalate 10 U 10 2,4,6-Trichlorophenol 10 U 10 Di-n-octylphthalate 10 U 10 2,4,5-Trichlorophenol 10 U 10 Benzo(b)fluoranthene 10 U 10 2-Chloronaphthalene 10 U 10 Benzo(k)fluoranthene 10 U 10 2-Nitroaniline 25 U 25 Benzo(a)pyrene 10 U 10 Dimethylphthalate 10 U 10 Indeno(1,2,3-cd)pyrene 10 U 10	Naphthalene	10	U	10	Pyrene	•		
4-Chloro-3-methylphenol 10 U 10 Benzo(a)anthracene 10 U 10	4-Chloroaniline	10	υ	10	Butylbenzylphthalate			
2-Methylnaphthalene 10 U 10 Chrysene 10 U 10 Hexachlorocyclopentadiene 10 U 10 bis(2-Ethylhexyl)phthalate 10 U 10 2,4,6-Trichlorophenol 10 U 10 Di-n-octylphthalate 10 U 10 2,4,5-Trichlorophenol 10 U 10 Benzo(b)fluoranthene 10 U 10 2-Chloronaphthalene 10 U 10 Benzo(k)fluoranthene 10 U 10 2-Nitroaniline 25 U 25 Benzo(a)pyrene 10 U 10 Dimethylphthalate 10 U 10 Indeno(1,2,3-cd)pyrene 10 U 10	Hexachlorobutadiene	10	υ	10	3,3'-Dichlorobenzidine	•		
Hexachlorocyclopentadiene 10 U 10 bis(2-Ethylhexyl)phthalate 10 U 10 2,4,6-Trichlorophenol 10 U 10 Di-n-octylphthalate 10 U 10 2,4,5-Trichlorophenol 10 U 10 Benzo(b)fluoranthene 10 U 10 2-Chloronaphthalene 10 U 10 Benzo(k)fluoranthene 10 U 10 2-Nitroaniline 25 U 25 Benzo(a)pyrene 10 U 10 Dimethylphthalate 10 U 10 Indeno(1,2,3-cd)pyrene 10 U 10	4-Chloro-3-methylphenol	10	υ	10	Benzo(a)anthracene		10	
Hexachlorocyclopentadiene 10 U 10 bis(2-Ethylhexyl)phthalate 10 U 10 2,4,6-Trichlorophenol 10 U 10 Di-n-octylphthalate 10 U 10 2,4,5-Trichlorophenol 10 U 10 Benzo(b)fluoranthene 10 U 10 2-Chloronaphthalene 10 U 10 Benzo(k)fluoranthene 10 U 10 2-Nitroaniline 25 U 25 Benzo(a)pyrene 10 U 10 Dimethylphthalate 10 U 10 Indeno(1,2,3-cd)pyrene 10 U 10		10	υ	10	Chrysene		10	
2,4,6-Trichlorophenol 10 U 10 Di-n-octylphthalate 10 U 10 2,4,5-Trichlorophenol 10 U 10 Benzo(b)fluoranthene 10 U 10 2-Chloronaphthalene 10 U 10 Benzo(k)fluoranthene 10 U 10 2-Nitroaniline 25 U 25 Benzo(a)pyrene 10 U 10 Dimethylphthalate 10 U 10 Indeno(1,2,3-cd)pyrene 10 U 10		10	U	10	bis(2-Ethylhexyl)phthalat	e	10	
2,4,5-Trichlorophenol 10 U 10 Benzo(b)fluoranthene 10 U 10 2-Chloronaphthalene 10 U 10 Benzo(k)fluoranthene 10 U 10 2-Nitroaniline 25 U 25 Benzo(a)pyrene 10 U 10 Dimethylphthalate 10 U 10 Indeno(1,2,3-cd)pyrene 10 U 10		10	U	10	Di-n-octylphthalate			
2-Chloronaphthalene 10 U 10 Benzo(k)fluoranthene 10 U 10 2-Nitroaniline 25 U 25 Benzo(a)pyrene 10 U 10 Dimethylphthalate 10 U 10 Indeno(1,2,3-cd)pyrene 10 U 10		10	U	10	Benzo(b)fluoranthene		10	
2-Nitroaniline 25 U 25 Benzo(a)pyrene 10 U 10 Dimethylphthalate 10 U 10 Indeno(1,2,3-cd)pyrene 10 U 10	_	10	U	10	Benzo(k)fluoranthene			-
Dimetry intendiction in the intendiction in th	-	25	U	25	Benzo(a)pyrene			_
· · · · · · · · · · · · · · · · · · ·	Dimethylphthalate	10	υ	10	<pre>Indeno(1,2,3-cd)pyrene</pre>			
Acenaphicity tene	Acenaphthylene	10	τ	10	Dibenzo(a,h)anthracene			
Benzo(g,h,i)perylene 10 U 10	-				Benzo(g,h,i)perylene		10	บ 10

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1509

SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	57	35 - 114
2-Fluorobiphenyl	61	43 - 116
Terphenyl-D14	55	33 - 141
Phenol-D5	60	10 - 94
2-Fluorophenol	45	21 - 100
2,4,6-Tribromophenol	74	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 7 of 42

Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1509

SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER

DILUTION FACTOR (6010): 1.00000

UNITS: MG/L

Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
0.010	U	0.010	7060	11/12/93
0.20	ប	0.20	6010	11/16/93
0.34		0.20	6010	11/16/93
0.0050	U	0.0050	6010	11/16/93
0.0050	υ	0.0050	6010	11/16/93
0.013		0.010	6010	11/16/93
0.16		0.025	6010	11/16/93
0.16		0.10	6010	11/16/93
0.040	บ	0.040	6010	11/16/93
0.0030	บ	0.0030	7421	11/11/93
0.00020	บ	0.00020	7471	11/11/93
0.010	U	0.010	6010	11/16/93
0.039		0.020	6010	11/16/93
	0.010 0.20 0.34 0.0050 0.0050 0.013 0.16 0.16 0.040 0.0030 0.00020 0.010	Result Qual 0.010 U 0.20 U 0.34 0.0050 U 0.013 0.16 0.16 0.16 0.040 U 0.0030 U 0.0030 U 0.00020 U 0.010 U	Result Qual Limit 0.010 U 0.010 0.20 U 0.20 0.34 0.20 0.0050 U 0.0050 0.0050 U 0.0050 0.013 0.010 0.16 0.025 0.16 0.10 0.040 U 0.040 0.0030 U 0.0030 0.00020 U 0.00020 0.010 U 0.010	Result Qual Limit Reference 0.010 U 0.010 7060 0.20 U 0.20 6010 0.34 0.20 6010 0.0050 U 0.0050 6010 0.0050 U 0.0050 6010 0.013 0.010 6010 0.16 0.025 6010 0.16 0.10 6010 0.040 U 0.040 6010 0.0030 U 0.0030 7421 0.00020 U 0.00020 7471 0.010 U 0.010 6010

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-313

SAMPLE ID: A1510

SAMPLE DATE: 10/22/93 10:17:00

	Note	•	Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
TPH - IR		1.00	1.0	MG/L	11/10/93	EPA418_1
Total Organic Carbon		18	5.0	MG/L	11/11/93	EPA415_1

Page: 9 of 42

Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-313

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1510
SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 10/31/93
DILUTION FACTOR: 1.0

UNITS: UG/L

,		Re	eporting				Reporting
	Result Qu	al	Limit		Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	υ 5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	บ 5
Vinyl chloride	10	U	10	Trichloroethene		5	ប 5
Chloroethane	10	Ū	10	Chlorodibromomethane		5	บ 5
Methylene chloride	6.9	вЈ	10	1,1,2-Trichloroethane		5	บ 5
Acetone	100	Ū	100	Benzene		5	ប 5
Carbon disulfide	5	Ū	5	cis-1,3-Dichloropropene		5	ប 5
1,1-Dichloroethene	5	Ū	5	2-Chloroethylvinyl ether		10	บ 10
Dichloroethane	5	Ū	5	Bromoform		5	ប 5
tns-1,2-Dichloroethene	5	บ	5	2-Hexanone		50	ប 50
cis-1,2-Dichloroethene	5	บ	5	4-Methyl-2-pentanone		50	ช 50
Chloroform	5	U	5	Tetrachloroethene		5	ช 5
1.2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	υ 5
2-Butanone	100	U	100	Toluene		5	ช 5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	T 5
Carbon tetrachloride	5	Ū	5	Ethylbenzene		5	ช 5
Vinyl acetate	10	U	10	Styrene		5	ບ 5
Dichlorobromomethane	5	U		Xylenes, total		5	υ 5

Surrogates	% Recovery	Limits
TOLUENE-D8	93	88 - 110
BROMOFLUOROBENZENE	95	86 - 115
1,2-DICHLOROETHANE-D4	102	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1510

SAMPLE DATE: 10/22/93 SAMPLE MATRIX: WATER

EXTRACTION DATE: 10/27/93
ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0

UNITS: UG/L	1.0	,	Report:	ina				Reporting
UNITS: UG/L	Result		l Limit			Result	Qual	_
	VERUIC	Qua.	I DIMI	_			_	
Phenol	1	.0 1	U 10	0	2,6-Dinitrotoluene	10	o u	10
bis(2-Chloroethyl)ether	_	-	U 10		3-Nitroaniline	2	5 ซ	25
2-Chlorophenol	_	-	U 1		Acenaphthene	1	U	10
1,3-Dichlorobenzene	3	.0 1	U 1	0	2,4-Dinitrophenol	2	5 U	25
1,4-Dichlorobenzene	1	0	U 1		4-Nitrophenol	2	5 U	25
Benzyl alcohol	1	.0	ַ 1	0	Dibenzofuran	1	υ 0	
1,2-Dichlorobenzene	1	LO	U 1	0	2,4-Dinitrotoluene	1	0 U	
2-Methylphenol	1	.0	U 1	0	Diethylphthalate	1	0 U	
2-Chloroisopropyl)eth	er 1	LO	U 1	0	4-Chlorophenyl-phenylether	r 1	0 0	
4 methylphenol		10	บ 1	0	Fluorene	1		
N-Nitroso-di-n-propylamin	e :	LO	U 1	0	4-Nitroaniline	1		
Hexachloroethane		LO	บ 1	0	4,6-Dinitro-2-methylpheno		_	
Nitrobenzene	:	LO	U 1	0	N-Nitrosodiphenylamine (1			
Isophorone		10	บ 1	.0	4-Bromophenyl-phenylether	1	_	
2-Nitrophenol		10	บ 1	.0	Hexachlorobenzene	_	ο τ	
2,4-Dimethylphenol	•	10	U 1	.0	Pentachlorophenol		5 t	
Benzoic Acid		10	U 1	.0	Phenanthrene		0 0	
bis(2-Chloroethoxy)methan	e :	10	บ 1	.0	Anthracene	_	0 0	
2,4-Dichlorophenol	:	10	บ 1	.0	Di-n-butylphthalate		.O T	
1,2,4-Trichlorobenzene		10	U 1	.0	Fluoranthene		0 t	
Naphthalene		10	U 1	.0	Pyrene		0 t	_
4-Chloroaniline		10	U 1	.0	Butylbenzylphthalate		, O	
Hexachlorobutadiene		10	U 1	.0	3,3'-Dichlorobenzidine		0 t	
4-Chloro-3-methylphenol		10	U 1	.0	Benzo(a)anthracene	_	.Ο τ	
2-Methylnaphthalene		10	U 1	.0	Chrysene	_	.0 t	
Hexachlorocyclopentadiene		10	บ 1	.0	bis(2-Ethylhexyl)phthalat		J 0.	
2,4,6-Trichlorophenol		10	U 1	LO	Di-n-octylphthalate		.0 t	
2,4,5-Trichlorophenol		10	บ 1	LO	Benzo(b)fluoranthene	· ·	.0 t	
2-Chloronaphthalene		10	נ ט	LO	Benzo(k)fluoranthene	_	, O.	
2-Nitroaniline		25	U 2	25	Benzo(a)pyrene	_	, O.	
Dimethylphthalate		10		LO	<pre>Indeno(1,2,3-cd)pyrene</pre>	_		J 10
Acenaphthylene		10	υ 1	LO	Dibenzo(a,h)anthracene	-	-	J 10
				•	Benzo(g,h,i)perylene]	LO 1	J 10

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-313

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1510 SAMPLE DATE: 10/22/93 SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	47	35 - 114
2-Fluorobiphenyl	56	43 - 116
Terphenyl-D14	81	33 - 141
Phenol-D5	47	10 - 94
2-Fluorophenol	35	21 - 100
2,4,6-Tribromophenol	81	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 12 of 42

Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1510

SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER

DILUTION FACTOR (6010): 1.00000

UNITS: MG/L

 	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date	
 Arsenic	0.010	U	0.010	7060	11/12/93	
Aluminum	0.20	U	0.20	6010	11/16/93	
Barium	0.35		0.20	6010	11/16/93	
Beryllium	0.0050	U	0.0050	6010	11/16/93	
Cadmium	0.0050	U	0.0050	6010	11/16/93	
Chromium	0.010	U	0.010	6010	11/16/93	
Copper	0.16		0.025	6010	11/16/93	
Iron	0.14		0.10	6010	11/16/93	
Nickel	0.040	U	0.040	6010	11/16/93	
Lead	0.0030	U	0.0030	7421	11/11/93	
Mercury	0.00020	U	0.00020	7471	11/11/93	
Silver	0.010	U	0.010	6010	11/16/93	
Zinc	0.049		0.020	6010	11/16/93	

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-313

SAMPLE ID: A1511

SAMPLE DATE: 10/22/93 11:00:00

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
TPH - IR		1.00	1.0	MG/L	11/10/93	EPA418_1
Total Organic Carbon		1.2	1.0	MG/L	11/17/93	EPA415 1

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1511
SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 10/31/93
DILUTION FACTOR: 1.0

UNITS: UG/L

UNIIS. US/2		Re	eporting				Rej	porting
	Result Qu	al	Limit		Result	Qual	. 1	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	บ	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	บ	10	Trichloroethene		5	U	5
Chloroethane	10	บ	10	Chlorodibromomethane		5	U	5
Methylene chloride	5.7	ВJ	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
-Dichloroethane	5	U	5	Bromoform		5	U	5
<pre>1ns-1,2-Dichloroethene</pre>	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	บ	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	94	88 - 110
BROMOFLUOROBENZENE	97	86 - 115
1,2-DICHLOROETHANE-D4	102	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

Work Order: B3-10-313 409832-003-01

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1511

SAMPLE DATE: 10/22/93 SAMPLE MATRIX: WATER

DILUTION FACTOR (6010): 1.00000

MG/L UNITS:

ONIIS.	110/2					
		Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
	Arsenic	0.010	 U	0.010	7060	11/12/93
	Aluminum	0.20	Ū	0.20	6010	11/16/93
	Barium	0.20	U	0.20	6010	11/16/93
	Beryllium	0.0050	U	0.0050	6010	11/16/93
	Cadmium	0.0050	U	0.0050	6010	11/16/93
	Chromium	0.010	Ū	0.010	6010	11/16/93
	Copper	0.025	U	0.025	6010	11/16/93
	Iron	0.011		0.10	6010	11/16/93
	Nickel	0.040	U	0.040	6010	11/16/93
	Lead	0.0030	U	0.0030	7421	11/11/93
	Mercury	0.00020	U	0.00020	7471	11/11/93
	Silver	0.010	U	0.010	6010	11/16/93
	Zinc	0.020	U	0.020	6010	11/16/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-313

SAMPLE ID: A1512

SAMPLE DATE: 10/22/93 14:10:00

	Note	Reporting		Date	Method		
Test Name	Ref	Result	<u>Limit</u>	Units	<u>Analyzed</u>	Reference	
TPH - IR		1.00	1.0	MG/L	11/10/93	EPA418_1	
Total Organic Carbon		11	5.0	MG/L	11/11/93	EPA415_1	

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

Work Order: B3-10-313 409832-003-01

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1512 SAMPLE DATE: 10/22/93 SAMPLE MATRIX: WATER ANALYSIS DATE: 11/01/93 DILUTION FACTOR: 1.0

UNITS: UG/L

UNITS: UG/L		_				D4	eporting
			eporting		D===14 Om		
	Result Qua	ıl	Limit		Result Qua	d.T	TIMITE
Chloromethane	10	U	10	1,2-Dichloropropane	5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	U	5
Vinyl chloride	10	Ū	10	Trichloroethene	11		5
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	Ū	10	1,1,2-Trichloroethane	5	U	5
Acetone	100	U	100	Benzene	5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	10	U	10
-Dichloroethane	5	U	5	Bromoform	5	U	5
_ns-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	120		5	4-Methyl-2-pentanone	50	U	50
Chloroform	5	U	5	Tetrachloroethene	16		5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	บ	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	93	88 - 110
BROMOFLUOROBENZENE	104	86 - 115
1.2-DICHLOROETHANE-D4	98	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-313

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1512
SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER

EXTRACTION DATE: 10/27/93
ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0

DILUTION FACTOR:	1.0	_				1	Reporting
UNITS: UG/L			eporting		Result		
	Result	Qual	Limit		Result	Qual	LIMIT
Phenol	10	ט (10	2,6-Dinitrotoluene	10	ט כ	10
bis(2-Chloroethyl)ether	10) U	10	3-Nitroaniline	2	ט 5	25
2-Chlorophenol	10	U	10	Acenaphthene	10	ט כ	10
1,3-Dichlorobenzene	10) U	10	2,4-Dinitrophenol	2	5 ซ	25
1,4-Dichlorobenzene	1.2	2 JB	10	4-Nitrophenol	2	5 U	25
Benzyl alcohol	10	U	10	Dibenzofuran	10	ט כ	10
1,2-Dichlorobenzene	10	υ (10	2,4-Dinitrotoluene	10	ט כ	10
2-Methylphenol	10	ט כ	10	Diethylphthalate	10	ט ט	10
(2-Chloroisopropyl)eth	er 10	U	10	4-Chlorophenyl-phenylether	10	ט ט	10
4 Methylphenol	10	U	10	Fluorene	10	ט ט	10
N-Nitroso-di-n-propylamin	e 10	U	10	4-Nitroaniline	1	0 U	10
Hexachloroethane	10	ט כ	10	4,6-Dinitro-2-methylphenol	L 2	5 ช	25
Nitrobenzene	10) บ	10	N-Nitrosodiphenylamine (1)) 1	0 U	10
Isophorone	10	U	10	4-Bromophenyl-phenylether	1	υ 0	10
2-Nitrophenol	10) U	10	Hexachlorobenzene	1	υ 0	10
2,4-Dimethylphenol	10) U	10	Pentachlorophenol	2	5 บ	25
Benzoic Acid	10	ט כ	10	Phenanthrene	1	ט ס	10
bis(2-Chloroethoxy)methan	e 10) 0	10	Anthracene	1	0 υ	10
2,4-Dichlorophenol	10	ס כ	10	Di-n-butylphthalate	1	0 υ	10
1,2,4-Trichlorobenzene	10) t	10	Fluoranthene	1	υ ο	10
Naphthalene	10	ס נ	10	Pyrene	1	0 U	10
4-Chloroaniline	10	ס נ	10	Butylbenzylphthalate	1	υ 0	10
Hexachlorobutadiene	10	ס נ	10	3,3'-Dichlorobenzidine	1	0 U	10
4-Chloro-3-methylphenol	10	ο τ	10	Benzo(a)anthracene	1	0 U	10
2-Methylnaphthalene	10	ס נ	10	Chrysene	1	U 0	10
Hexachlorocyclopentadiene	10	ο τ	10	bis(2-Ethylhexyl)phthalate	e 1	U 0	10
2,4,6-Trichlorophenol	1	ο τ	10	Di-n-octylphthalate	1	0 U	10
2,4,5-Trichlorophenol	1	ο τ	10	Benzo(b)fluoranthene	1	υ 0	10
2-Chloronaphthalene	1	ο τ	10	Benzo(k)fluoranthene	1	0 υ	10
2-Nitroaniline	2	5 t	25	Benzo(a)pyrene	1	0 U	10
Dimethylphthalate	1	ο τ	10	Indeno(1,2,3-cd)pyrene	1	0 U	10
Acenaphthylene	1	ο τ	10	Dibenzo(a,h)anthracene		0 U	10
				Benzo(g,h,i)perylene	1	ο υ	10

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01

Work Order: B3-10-313

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1512

SAMPLE DATE: 10/22/93 SAMPLE MATRIX: WATER

Surrogates ·	% Recovery	Limits
Nitrobenzene-D5	70	35 - 114
2-Fluorobiphenyl	74	43 - 116
Terphenyl-D14	90	33 - 141
Phenol-D5	71	10 - 94
2-Fluorophenol	47	21 - 100
2,4,6-Tribromophenol	88	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-313

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1512 SAMPLE DATE: 10/22/93 SAMPLE MATRIX: WATER

DILUTION FACTOR (6010): 1.00000

UNITS: MG/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	บ	0.010	7060	11/12/93
Aluminum	0.20	Ū	0.20	6010	11/16/93
Barium	0.20	Ü	0.20	6010	11/16/93
Beryllium	0.0050	ซ	0.0050	6010	11/16/93
Cadmium	0.0050	Ū	0.0050	6010	11/16/93
Chromium	0.010	U	0.010	6010	11/16/93
Copper	0.025	U	0.025	6010	11/16/93
Iron	0.10	U	0.10	6010	11/16/93
Nickel	0.040	υ	0.040	6010	11/16/93
Lead	0.012		0.0030	7421	11/11/93
Mercury	0.00080	U	0.00080	7471	11/11/93
Silver	0.010	U	0.010	6010	11/16/93
Zinc	0.027		0.020	6010	11/16/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-313

SAMPLE ID: A1513

SAMPLE DATE: 10/22/93 14:10:00

	Note	Reporting			Date	Method	
Test Name	Ref	Result	<u>Limit</u>	Units	Analyzed	Reference	
TPH - IR		1.00	1.0	MG/L	11/10/93	EPA418_1	
Total Organic Carbon		8.5	5.0	MG/L	11/11/93	EPA415_1	

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1513

SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 11/01/93
DILUTION FACTOR: 1.0

UNITS: UG/L

		Re	eporting					porting
	Result Qua	ıl	Limit		Result	Qual	•	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		11		5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
Dichloroethane	5	U	5	Bromoform		5	U	5
t .ns-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	110		5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	U	5	Tetrachloroethene		16		5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	93	88 - 110
BROMOFLUOROBENZENE	102	86 - 115
1.2-DICHLOROETHANE-D4	101	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1513 SAMPLE DATE: 10/22/93 SAMPLE MATRIX: WATER

EXTRACTION DATE: 10/27/93
ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0

	.0		·			,	Reporting
UNITS: UG/L	7.4		Reporting		Result	Qual	-
ке	sult	Qua.	Limit		Result	Quai	TIME
Phenol	1	0 1	J 10	2,6-Dinitrotoluene	10	υ 0	10
bis(2-Chloroethyl)ether	1	.0 1	J 10	3-Nitroaniline	2	5 U	25
2-Chlorophenol	1	.0 1	J 10	Acenaphthene	10	ט ס	10
1,3-Dichlorobenzene	1	.0 1	J 10	2,4-Dinitrophenol	2	5 U	25
1,4-Dichlorobenzene	1	.0 1	J 10	4-Nitrophenol	2	5 U	25
Benzyl alcohol	1	.0 1	J 10	Dibenzofuran	1	0 U	10
1,2-Dichlorobenzene	1	.0 1	J 10	2,4-Dinitrotoluene	1	0 U	10
2-Methylphenol	1	.0 1	J 10	Diethylphthalate	1	0 U	10
(2-Chloroisopropyl)ether	1	.0 1	J 10	4-Chlorophenyl-phenylether	r 1	υ 0	10
s_ethylphenol	1	.0 1	J 10	Fluorene	1	0 U	10
N-Nitroso-di-n-propylamine	1	.0	J 10	4-Nitroaniline	1	ט ס	10
Hexachloroethane	1	.0	J 10	4,6-Dinitro-2-methylpheno	1 2	5 บ	25
Nitrobenzene	1	.0	J 10	N-Nitrosodiphenylamine (1) 1	0 U	10
Isophorone	1	.0	J 10	4-Bromophenyl-phenylether	1	0 U	10
2-Nitrophenol	1	.0	J 10	Hexachlorobenzene	1	0 υ	10
2,4-Dimethylphenol	1	.0	J 10	Pentachlorophenol	2	5 ช	25
Benzoic Acid	1	.0	U 10	Phenanthrene	1	0 U	10
bis(2-Chloroethoxy)methane	1	.0	U 10	Anthracene	1	0 U	10
2,4-Dichlorophenol	1	.0	U 10	Di-n-butylphthalate	1	0 υ	10
1,2,4-Trichlorobenzene	1	.0	U 10	Fluoranthene	1	0 U	
Naphthalene	1	.0	U 10	Pyrene	1	0 U	10
4-Chloroaniline	1	0	U 10	Butylbenzylphthalate	1	0 U	10
Hexachlorobutadiene	1	.0	U 10	3,3'-Dichlorobenzidine	1	0 U	
4-Chloro-3-methylphenol	1	.0	U 10	Benzo(a)anthracene	1	0 υ	10
2-Methylnaphthalene	1	.0	U 10	Chrysene	1	0 υ	10
Hexachlorocyclopentadiene	1	.0	U 10	bis(2-Ethylhexyl)phthalat	e 1	.O U	
2,4,6-Trichlorophenol	1	.0	U 10	Di-n-octylphthalate	1	ט 0.	10
2,4,5-Trichlorophenol	1	10	U 10	Benzo(b)fluoranthene	1	υ 0.	10
2-Chloronaphthalene	1	10	U 10	Benzo(k)fluoranthene	1	ט ס.	
2-Nitroaniline	2	25	U 25	Benzo(a)pyrene	1	ט 0.	10
Dimethylphthalate	1	LO	U 10	Indeno(1,2,3-cd)pyrene	_	ט 0.	
Acenaphthylene	1	LO	U 10	Dibenzo(a,h)anthracene		ט ס.	
				Benzo(g,h,i)perylene	1	.0 ט	10

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1513

SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	66	35 - 114
2-Fluorobiphenyl	66	43 - 116
Terphenyl-D14	71	33 - 141
Phenol-D5	61	10 - 94
2-Fluorophenol	54	21 - 100
2,4,6-Tribromophenol	74	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 25 of 42

Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1513

SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER

DILUTION FACTOR (6010): 1.00000

UNITS: MG/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date	
 Arsenic	0.010		0.010	7060	11/12/93	_
Aluminum	0.20	U	0.20	6010	11/16/93	
Barium	0.20	บ	0.20	6010	11/16/93	
Beryllium	0.0050	U	0.0050	6010	11/16/93	
Cadmium	0.0050	บ	0.0050	6010	11/16/93	
Chromium	0.010	U	0.010	6010	11/16/93	
Copper	0.025	U	0.025	6010	11/16/93	
Iron	0.11		0.10	6010	11/16/93	
Nickel	0.040	U	0.040	6010	11/16/93	
Lead	0.0077		0.0030	7421	11/11/93	
Mercury	0.00020	U	0.00020	7471	11/11/93	
Silver	0.010	U	0.010	6010	11/16/93	
Zinc	0.020	U	0.020	6010	11/16/93	

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 Work Order

(512) 892-6684 Work Order: B3-10-313

SAMPLE ID: A1514

SAMPLE DATE: 10/22/93 14:49:00

	Note	Reporting			Date	Method	
Test Name	Ref	Result	Limit	Units	<u>Analyzed</u>	Reference	_
TPH - IR		1.00	1.0	MG/L	11/10/93	EPA418_1	
Total Organic Carbon		1.00	1.0	MG/L	11/14/93	EPA415_1	

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1514

SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 11/01/93
DILUTION FACTOR: 1.0

UNITS: UG/L

·		Re	eporting					porting
	Result Qua	al	Limit		Result	Qua.	l.	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	Ū	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	บ	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	Ū	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	:	10	U	10
-Dichloroethane	5	U	5	Bromoform		5	U	5
t_ins-1,2-Dichloroethene	5	Ū	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	95	88 - 110
BROMOFLUOROBENZENE	101	86 - 115
1,2-DICHLOROETHANE-D4	96	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1514
SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER

EXTRACTION DATE: 10/27/93
ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0

UNITS: UG/L		10	eporting			1	Reporting
•	sult		Limit		Result		Limit
Ve	Bull	Quar	11 III L				
Phenol	1	0 U	10	2,6-Dinitrotoluene	10	υ 0	10
bis(2-Chloroethyl)ether	1	0 U		3-Nitroaniline	2	5 T	25
2-Chlorophenol	_	0 U		Acenaphthene	10	υ 0	10
1,3-Dichlorobenzene	1	0 U		2,4-Dinitrophenol	2	5 U	25
1,4-Dichlorobenzene	1	0 U		4-Nitrophenol	2	5 U	25
Benzyl alcohol	1	0 U		Dibenzofuran	10	0 U	10
1,2-Dichlorobenzene	1	0 υ	10	2,4-Dinitrotoluene	10	U 0	10
2-Methylphenol	1	0 U	10	Diethylphthalate	16	U 0	10
(2-Chloroisopropyl)ether	1	ο τ	10	4-Chlorophenyl-phenylether	r 10	ט 0	10
4ethylphenol	1	.ο τ	10	Fluorene	10	U 0	10
N-Nitroso-di-n-propylamine	1	.o t	10	4-Nitroaniline	10	0 U	10
Hexachloroethane	1	.O T	10	4,6-Dinitro-2-methylphenol	1 2	5 ช	25
Nitrobenzene	1	.Ο τ	10	N-Nitrosodiphenylamine (1)) 1	0 U	10
Isophorone	1	.Ο τ	10	4-Bromophenyl-phenylether	10	0 U	10
2-Nitrophenol	1	.O t	10	Hexachlorobenzene	10	0 U	10
2,4-Dimethylphenol	1	.O t	10	Pentachlorophenol	2	5 บ	25
Benzoic Acid	1	.O t	10	Phenanthrene	1	0 U	10
bis(2-Chloroethoxy)methane	1	.O t	10	Anthracene	1	0 υ	
2,4-Dichlorophenol	1	.0 t	10	Di-n-butylphthalate	1		
1,2,4-Trichlorobenzene	1	.0 t	10	Fluoranthene	1		
Naphthalene	1	.0 t	10	Pyrene	1		
4-Chloroaniline	1	.0 t	10	Butylbenzylphthalate	1	0 υ	
Hexachlorobutadiene	1	.0 t	10	3,3'-Dichlorobenzidine	1		
4-Chloro-3-methylphenol	1	.0 t	10	Benzo(a)anthracene	1		
2-Methylnaphthalene	1	.0 t	10	Chrysene	_	0 υ	
Hexachlorocyclopentadiene	1	.O t	10	bis(2-Ethylhexyl)phthalate		o u	
2,4,6-Trichlorophenol	1	. O.	10	Di-n-octylphthalate		0 υ	
2,4,5-Trichlorophenol	1	.O t	J 10	Benzo(b)fluoranthene		0 0	
2-Chloronaphthalene	1	.O t	10	Benzo(k)fluoranthene	_	ο υ	
2-Nitroaniline	2	25 t	J 25	Benzo(a)pyrene	_	ט ס.	
Dimethylphthalate	1	LO T	J 10	<pre>Indeno(1,2,3-cd)pyrene</pre>		ָט ס	
Acenaphthylene	1	LO T	J 10	Dibenzo(a,h)anthracene		ט ס.	
				Benzo(g,h,i)perylene	1	.O U	10

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1514

SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	66	35 - 114
2-Fluorobiphenyl	68	43 - 116
Terphenyl-D14	99	33 - 141
Phenol-D5	44	10 - 94
2-Fluorophenol	51	21 - 100
2,4,6-Tribromophenol	79	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1514

SAMPLE DATE: 10/22/93
SAMPLE MATRIX: WATER

DILUTION FACTOR (6010): 1.00000

UNITS: MG/L

Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
0.010	บ	0.010	7060	11/12/93
0.20	U	0.20	6010	11/16/93
0.20	U	0.20	6010	11/16/93
0.0050	Ū	0.0050	6010	11/16/93
0.0050	U	0.0050	6010	11/16/93
0.010	U	0.010	6010	11/16/93
0.025	ប	0.025	6010	11/16/93
0.10	U	0.10	6010	11/16/93
0.040	ប	0.040	6010	11/16/93
0.0030	ប	0.0030	7421	11/11/93
0.00020	ប	0.00020	7471	11/11/93
0.010	U	0.010	6010	11/16/93
0.020	U	0.020	6010	11/16/93
	0.010 0.20 0.20 0.0050 0.0050 0.010 0.025 0.10 0.040 0.0030 0.00020 0.010	Result Qual 0.010 U 0.20 U 0.20 U 0.0050 U 0.0050 U 0.010 U 0.025 U 0.10 U 0.040 U 0.0030 U 0.00020 U 0.010 U	Result Qual Limit 0.010 U 0.010 0.20 U 0.20 0.20 U 0.20 0.0050 U 0.0050 0.0050 U 0.0050 0.010 U 0.010 0.025 U 0.025 0.10 U 0.10 0.040 U 0.10 0.040 U 0.040 0.0030 U 0.0030 0.00020 U 0.00020 0.010 U 0.010	Result Qual Limit Reference 0.010 U 0.010 7060 0.20 U 0.20 6010 0.20 U 0.20 6010 0.0050 U 0.0050 6010 0.0050 U 0.0050 6010 0.010 U 0.010 6010 0.025 U 0.025 6010 0.10 U 0.10 6010 0.040 U 0.040 6010 0.0030 U 0.0030 7421 0.00020 U 0.00020 7471 0.010 U 0.010 6010

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance</p>
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-313

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1515

SAMPLE DATE: 10/20/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 11/01/93
DILUTION FACTOR: 1.0

UNITS: UG/L

0		Re	porting				Re	porting
	Result Qua		-		Result	Qual	•	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1.1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
-Dichloroethane	5	U	5	Bromoform		5	U	5
L_uns-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	บ	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	95	88 - 110
BROMOFLUOROBENZENE	102	86 - 115
1.2-DICHLOROETHANE-D4	105	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 32 of 42

Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-313

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1516

SAMPLE DATE: 10/20/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 11/01/93
DILUTION FACTOR: 1.0

UNITS: UG/L

		Re	porting				Re	porting
	Result Qua	1	Limit		Result	Qual		Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
-Dichloroethane	5	U	5	Bromoform		5	U	5
ıns-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	93	88 - 110
BROMOFLUOROBENZENE	97	86 - 115
1,2-DICHLOROETHANE-D4	105	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 33 of 42

Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-313

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	<u>Analyzed</u>	Reference
TPH - IR		1.00	1.0	MG/L	11/10/93	EPA418_1
Total Organic Carbon		1.0U	1.0	MG/L	11/11/93	EPA415_1

Page: 34 of 42

Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER
ANALYSIS DATE: 10/31/93
DILUTION FACTOR: 1.0

UNITS: UG/L

			Repor	ting				Re	porting
	Result	Qual	Lim	it		Result	Qua]	l	Limit
Chloromethane	1	.0	U	10	1,2-Dichloropropane		5	υ	5
Bromomethane	1	.0	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	1	.0	บ	10	Trichloroethene		5	U	5
Chloroethane	1	.0	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	1	.1		10	1,1,2-Trichloroethane		5	U	5
Acetone	10	0	U 1	.00	Benzene		5	U	5
Carbon disulfide		5	U	5	cis-1,3-Dichloropropene		5	U	5
1.1-Dichloroethene		5	U	5	2-Chloroethylvinyl ether		10	U	10
-Dichloroethane		5	U	5	Bromoform		5	U	5
u_ans-1,2-Dichloroethene		5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene		5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform		5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	00	υ 1	100	Toluene		5	U	5
1,1,1-Trichloroethane		5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5	U	5	Ethylbenzene		5	U	5
Vinyl acetate		10	U	10	Styrene		5	U	5
Dichlorobromomethane		5	U	5	Xylenes, total		5	U	5

Surrogates	<pre>% Recovery</pre>	Limits			
TOLUENE-D8	97	88 - 110			
BROMOFLUOROBENZENE	95	86 - 115			
1.2-DICHLOROETHANE-D4	101	76 - 114			

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 35 of 42

Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER

EXTRACTION DATE: 10/27/93 ANALYSIS DATE: 11/04/93 DILUTION FACTOR: 1.0

UNITS: UG/L		R	eporting				Reportin
•	sult		Limit		Result	Qual	Limit
Phenol	10	U	10	2,6-Dinitrotoluene		.0 t	
bis(2-Chloroethyl)ether	10	ט כ	10	3-Nitroaniline	_	:5 t	
2-Chlorophenol	10	ט כ	10	Acenaphthene	_	, O.	-
1,3-Dichlorobenzene	10	ט כ	10	2,4-Dinitrophenol	_		J 25
1,4-Dichlorobenzene	1.4	4 J	10	4-Nitrophenol			J 25
Benzyl alcohol	10	ט כ	10	Dibenzofuran	_	.O t	
1,2-Dichlorobenzene	10	ט כ	10	2,4-Dinitrotoluene	_		J 10
2-Methylphenol	10	ט כ	10	Diethylphthalate	_		J 10
(2-Chloroisopropyl)ether	10	ט כ	10	4-Chlorophenyl-phenylether	_		10
- Methylphenol	10	ט כ	10	Fluorene			J 10
N-Nitroso-di-n-propylamine	1	0 U	10	4-Nitroaniline	_		J 10
Hexachloroethane	1	ט ס	10	4,6-Dinitro-2-methylphenol	L 2	25 1	25
Nitrobenzene	1	0 U	10	N-Nitrosodiphenylamine (1))]	LO 1	U 10
Isophorone	1	ο υ	10	4-Bromophenyl-phenylether]		U 10
2-Nitrophenol	1	ο τ	10	Hexachlorobenzene	1		U 10
2,4-Dimethylphenol	1	ο τ	10	Pentachlorophenol	2		U 25
Benzoic Acid	1	0 t	10	Phenanthrene			U 10
bis(2-Chloroethoxy)methane	1	0 τ	10	Anthracene			U 10
2,4-Dichlorophenol	1	0 τ	10	Di-n-butylphthalate			U 10
1,2,4-Trichlorobenzene	1	0 τ	10	Fluoranthene			U 10
Naphthalene	1	0 0	10	Pyrene	:	10	U 10
4-Chloroaniline	1	0 τ	10	Butylbenzylphthalate	;	10	U 10
Hexachlorobutadiene	1	ο τ	J 10	3,3'-Dichlorobenzidine	;	10	บ 1 0
4-Chloro-3-methylphenol	1	ο τ	10	Benzo(a)anthracene	;		บ 10
2-Methylnaphthalene	1	0 τ	10	Chrysene		10	บ 10
Hexachlorocyclopentadiene	1	0 t	10	bis(2-Ethylhexyl)phthalate	e :	10	บ 10
2,4,6-Trichlorophenol	1	0 t	10	Di-n-octylphthalate	:	10	บ 10
2,4,5-Trichlorophenol	1	0 t	J 10	Benzo(b)fluoranthene		10	ט 10
2-Chloronaphthalene	1	.Ο τ	J 10	Benzo(k)fluoranthene		10	บ 10
2-Nitroaniline	2	5 t	J 25	Benzo(a)pyrene		10	บ 10
Dimethylphthalate	1	.Ο τ	J 10	Indeno(1,2,3-cd)pyrene	•		U 10
Acenaphthylene	1	.Ο τ	J 10	Dibenzo(a,h)anthracene			U 10
* *				Benzo(g,h,i)perylene		10	U 10

Page: 36 of 42

Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	68	35 - 114				
2-Fluorobiphenyl	75	43 - 116				
Terphenyl-D14	89	33 - 141				
Phenol-D5	65	10 - 94				
2-Fluorophenol	67	21 - 100				
2,4,6-Tribromophenol	67	10 - 123				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 37 of 42

Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER

DILUTION FACTOR (6010): 1.00000

UNITS: MG/L

·						
 	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date	
 Arsenic	0.010	บ	0.010	7060	11/12/93	
Aluminum	0.20	Ü	0.20	6010	11/16/93	
Barium	0.20	U	0.20	6010	11/16/93	
Beryllium	0.0050	U	0.0050	6010	11/16/93	
Cadmium	0.0050	U	0.0050	6010	11/16/93	
Chromium	0.010	U	0.010	6010	11/16/93	
Copper	0.025	U	0.025	6010	11/16/93	
Iron	0.10	U	0.10	6010	11/16/93	
Nickel	0.040	U	0.040	6010	11/16/93	
Lead	0.0030	U	0.0030	7421	11/11/93	
Mercury	0.00020	U	0.00020	7471	11/11/93	
Silver	0.010	U	0.010	6010	11/16/93	
Zinc	0.020	U	0.020	6010	11/16/93	

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

SAMPLE ID: LAB BLANK #2

SAMPLE DATE:

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Total Organic Carbon		1.00	1.0	MG/L	11/14/93	EPA415_1

Page: 39 of 42

Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-313

SAMPLE ID: LAB BLANK #3

SAMPLE DATE:

	Note		Reporting		Date Me	ethod
Test Name	Ref	Result	Limit	Units	Analyzed Re	eference
Total Organic Carbon		1.00	1.0	MG/L	11/17/93 E	PA415_1

Page: 40 of 42

Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN. TX (512) 892-6684

Work Order: B3-10-313 409832-003-01

IV. Methodology

Requested analyses were performed according to the following methods.

TEST NAME TPH - IR

TEST CODE 418 1

418 1

Method 418.1: Total Recoverable Petroleum Hydorcarbons, infrared spectrophotmetric method. Methods for the chemical analysis of water and wastes. USEPA.

TEST NAME ICP Metals

TEST CODE 6010

Metals by ICP

Inductively coupled emission spectroscopy according to Method 6010, "Test Methods for Evaluating Solid Waste Physical/Chemical Methods", SW-846, Third Edition.

TEST CODE 8240TK TEST NAME Hazardous Substance Vols.

List Volatiles

Hazardous Substance Method 8240, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. GC/MS Purge and Trap analysis.

TEST NAME ABN HSL GC/MS Extractables TEST CODE 8270TK

Hazardous Substance List Extractables

Method 8270, SW-846, Test Methods for Evaluating Solid Waste, Third Edition. Acid/Base-Neutral extraction followed by GC/MS analysis.

TEST NAME Arsenic - Graphite Furnace TEST CODE AS GF

Arsenic

Graphite Furnace

Method 7060, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. EPA 206.2-Technical Additions to Methods for Chemical Analysis of Water and Wastes, EPA-600/4-82-055, December 1982.

TEST NAME Mercury

TEST CODE HG_AA

Mercury

Method 7471, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Cold vapor atomic absorption. Method 7470 is used for water.

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-313

TEST NAME Mercury

TEST CODE HG AA

Method 245.5-"Technical Additions to Methods for Chemical Analysis of Water and Wastes," EPA-600/4-82-055, December 1982.

TEST NAME Metals

TEST CODE ICPTK2

Method not available.

TEST NAME Lead - Graphite Furnace TEST CODE PB_GF

Lead EPA 7421, SW-846, Test Methods for Evaluating Solid

Graphite Wastes, Third Edition.

Furnace EPA 239.2-Technical Additions to Methods for Chemical

Analysis of Water and Wastes, " EPA-600/4-82-055,

December 1982.

TEST NAME Total Organic Carbon TEST CODE TOC

Total Organic Method 415.1-Chemical Analysis of Water and Wastewater.

Carbon Chemical oxidation and nondispersive

infrared analysis. Equivalent to SW-846 Method 9060. Sample prep is instrument manufacturer specific.

TEST NAME ICPRS Digestion - Water TEST CODE Z3005

Water Digestion Method 3005A, SW-846, Test Methods for Evaluating Solid

Wastes, Third Edition. Digestion procedure for the preparation of surface and ground water samples for analysis by flame atomic absorption spectroscopy and inductively coupled plasma spectroscopy. The procedure

determines total recoverable or dissolved metals.

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Company: IT CORPORATION

Date: 12/04/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01

(512) 892-6684 Work Order: B3-10-313

TEST NAME GFAA Digestion - Water TEST CODE 23020

Water Digestion

Method 3020, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for Graphite Furnace.



CHAIN OF CUSTODY RECORD* ANALYSIS REQUEST AND

Page 1 of 3

MCA 3/15/91



ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.30 430743
Page 3 of 3

Samples Shipment Date 10173 /93

Project No. 409833-

5/91	MCA 3/15/91									
<u> </u>		Ų.		418,1 TPH	H3504	-	z °			Al. 4
·s				8270 SVOC	1001	シダト	glass	11	7]	A 1514
nction	BZYND			SOL ONES	HC1	140M	gluss	5441 86/ee/a	ws-015 Gild Blank	A 1514
nsni I			2	6010/7000 melala	HNOS	250mL	Plastic	=	11	A1513
pecial				415,1 TOC	Ha504	JE001	"	17	ll a	A1513
s not r				418,1TPH	H1504	1	1,	1	()	A1513
f form				8270 S VOC	Cool	2.51	amber glass	=	. 11	A 1513
seck o	BSZYYOU			SAYOVOC	HC	HOMI	clerr	0141	WS-015 duplicate	A 1613
See				6010/7000 metals	HCTmub6010	Plastic	250ml + Plastic	11	0	AISIA
*				415,1 Tac	HNOS	=	250mle > 11	11	0	A1512
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os oT		Good, RVK, 40c (Strop)	الم ردوم	415, 1 TOC	Ha Soy	250 ml	amber 9/035	10/06/01 Eb/06/01	605-013 Copping	A 1510
:exirtV\	Disposal 22 Record No.	Condition on 21 Receipt		Requested Testing 20 Program	Pre-19 servative	Sample 18 Volume	Container ¹⁷ Type	Date/Time 16	Sample 15 Description/Type	Sample ¹⁴ Number

MCA 3/15/91				-			-		1
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OF CUSTODY RECORD (cont.)

Project No._

Reference Document No.30 42074 3

Samples Shipment Date 10/22/93

Work order : B310313

FRAC	Tests	Blank Reference	Batch ID	Prep 2 Date	Analysis Date	Dil. Factor
01C	418_1	B310313-09C	1104TPHIR3	11/04/93	11/10/93	1.0
01D	TOC	B310313-09D	1111TOC1	11/11/93	11/11/93	5.0
Ole	Arsenic Mercury Lead	B310313-09E B310313-09E B310313-09E	111030201 1111HGAA1 111030201	11/10/93 11 _. 11/93 11/10/93	11/12/93 11/11/93 11/11/93	1.0

Work order : B310313

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
02C	418_1	B310313-09C	1104TPHIR3	11/04/93	11/10/93	1.0
02D	TOC	B310313-09D	1111TOC1	11/11/93	11/11/93	5.0
02E	Arsenic Mercury Lead	B310313-09E B310313-09E B310313-09E	111030201 1111HGAA1 111030201	11/10/93 01/11/93 11/10/93	11/11/93	1.0

Work order : B310313

FRAC	Tests	Blank Reference	Batch ID	Prep 1 Date	Analysis Date	Dil. Factor
03C	418_1	B310313-09C	1104TPHIR3	11/04/93	11/10/93	1.0
03D	TOC	B310313-11A	1117TOC1	11/17/93	11/17/93	1.0
03E	Arsenic Mercury Lead	B310313-09E B310313-09E B310313-09E	111030201 1111HGAA1 111030201	11/10/93 11/11/93 11/10/93	11/12/93 11/11/93 11/11/93	1.0 1.0 1.0

Work order : B310313

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
04C	418_1	B310313-09C	1104TPHIR3	11/04/93	11/10/93	1.0
04D	TOC	B310313-09D	1111TOC1	11/11/93	11/11/93	5.0
04E	Arsenic Mercury Lead	B310313-09E B310313-09E B310313-09E	111030201 1111HGAA1 111030201	11/10/93 11/11/93 11/10/93	11/11/93	1 4 1

Work order : B310313

FRAC	Tests	Blank Reference	Batch ID	Prep Z	Analysis Date	Dil. Factor
05C	418_1	B310313-09C	1104TPHIR3	11/04/93	11/10/93	1.0
05D	TOC	B310313-09D	1111TOC1	11/11/93	11/11/93	5.0
05E	Arsenic Mercury Lead	B310313-09E B310313-09E B310313-09E	111030201 1111HGAA1 111030201	11/10/93 11/11/93 11/10/93	11/11/93	

Work order : B310313

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
06C	418_1	B310313-09C	1104TPHIR3	11/04/93	11/10/93	1.0
06D	TOC	B310313-10A	1114TOC1	11/14/93	11/14/93	1.0
06 E	Arsenic Mercury Lead	B310313-09E B310313-09E B310313-09E	111030201 1111HGAA1 111030201	11/10/93 11/11/93 11/10/93	11/11/93	1.0

Work order : B310313

Sample ID : LAB BLANK #1

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
09D	TOC	B310313-09D	1111TOC1	11/11/93	11/11/93	1.0
09E	6010 Arsenic Mercury Lead	B310313-09E B310313-09E B310313-09E	111030201 1111HGAA1 111030201	11/10/93 11/11/93 11/10/93	3 11/11/93	1.0

Work order : B310313

Sample ID : LAB BLANK #2

FRAC	Tests	Blank Reference	Batch ID	Prep 1 Date	Analysis Date	Dil. Factor
10A 1	roc	B310313-10A	1114TOC1	11/14/93	11/14/93	1.0

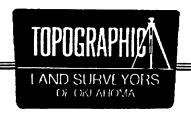
Work order : B310313

Sample ID : LAB BLANK #3

FRAC	Tests	Blank Reference	Batch ID	Prep 1	Analysis Date	Dil. Factor
11A '	roc	B310313-11A	1117TOC1	11/17/93	11/17/93	1.0

APPENDIX C SITE SURVEY REPORT

Phone: (405) 843-4847 WAT8: (800) 854-3219 FAX: (405) 843-0975



Surveying and Mapping for Oklahoma's Energy Industry

6709 N. Classen Blvd.

Oklahoma City, Oklahoma 73118

International Technology Corporation

Attn.: Joe Pacelli 312 Directors Drive Knoxville, Tn 37923

Reference: IT Subcontract No. 547295

IDO-5001 Bid 93116

(Survey Contract)

4.4 Documentation of Surveying Activities

Survey Contractor:

Topographic Land Surveyors of Oklahoma 6709 N. Classen Blvd. Oklahoma City, Oklahoma 73116 Edward D. (Deral) Paulk, PLS President Harry McClintick, PLS Party Chief (405) 843-4847

Instrumentation:

Work done was completed with a Topcon/Sokkisha Model C3E. Last calibration by the factory was done 10/10/1993 and was checked daily by standard survey methods to determine that the tolerance was within factory limits. The unique serial number for the instrument is # 153047. The data collector was a Hewlett-Packard 48SX using the TDS Survey card.

Methods:

Standard mil-spec survey methods were employed during the survey and included.

Double sets of repetitive angles, both in horizontal and vertical.

Distance in Meters and Feet for double redundancy.

Control Points:

All control points used were set by the Corps of Engineers and the coordinates were supplied to us in NAD-83 Meters, Oklahoma North Zone (3501) based upon the Lambert projection. Typical numbers were;

BM SE (secondary control points)

BM PR (Primary control points)

These points were established by Trimble 4000SE GPS receivers and are capable of obtaining accuracy in the centimeter range. During our survey we confirmed this accuracy and due to the nature of GPS usage, we did not balance our traverse of the monumentation. See explanation beginning on page three, this document.

Tabulation of Vertical and Horizontal Coordinates:

In sheet form broken into per site information in three formats.

NAD-83 Meters

NAD-27 Feet

NAD-83 Feet

Field Notes, Calculations and Reduction Techniques:

All field work was performed using Total Station and no reduction was necessary. Grid and Sea level factors used in the calculations are attached as part of this report. No paper field notes were kept, except diagrams explaining shot points. These are included as drawings and are part of the digital information supplied.

Actual closure of each particular site is disclosed within this document beginning on page

This survey is true and accurate based upon monumentation supplied by Tinker Air Force Base.

Edward D. Paulk, PLS #1279

Topographic Land Surveyors of Oklahoma

6709 N. Classen Blvd.

Oklahoma City, Oklahoma 73116

USAGE OF GPS MONUMENTATION

Qualifications:

We are a Trimble Navigation dealer for the Midwest and have had crews surveying using GPS for over two years. Edward D. Paulk, has attended training and seminars continually to maintain a level of experience and technical knowledge of GPS that exceeds specs of GPS surveys.

During the course of our preliminary survey, we had closures that exceeded specs and we were forced to continue surveys back to our point of beginning to check our accuracy. We continually proved our surveys by closures exceeding 1 in 10,000, but we could not achieve this using the provided GPS monumentation and closing on a third monument.

We contacted the base mapping department and learned that the monuments were set using 4000SE receivers (GPS) by the Corps of Engineers. The 4000SE is capable of accuracy on any point of +/- 1-3 Centimeters. After this determination, we were well within specs of their given coordinates.

Their survey closure was probably quite good given the distances that they monumented, however when you use relatively close monuments as our survey dictated and very few traverse points, the error looks poor. Had we shot a mile away, then back to add some footage to our survey, the closure would have been much better. Since this technique is only used to comply with a pure mathematical closure, not a better survey, and would not actually improve positional accuracy, we did not do this.

P. 5

Site by Site Report

File HM-A
HCL Tank
4 Soil Borings
IT Drawing #409832 Fig. 5.5
Horizontal and Vertical Control was establish for (4) four Soil Borings.
BM SE-33, SE-05 and PR-07 were used for control.

Upon first completion of traverse, we closed on PR-07 with 3.041' of error, but our vertical was with 0.05'. We made a closure back to SE-05 and closed within 0.4'. This site had the only apparent large discrepancy in their control. Since SE-33 and SE-05 agreed within limits we used these to determine closure.

Horizontal Accuracy 1 in 10,000 Vertical Accuracy 1 in 95,800

File HM-B
SPILL POND

2 Soil Borings

IT Drawing #409832 Fig. 5.6

Horizontal and Vertical Control was establish for (2) Soil Borings.

BM SE-33, SE-37 and SE-42 were used for control.

Horizontal Accuracy 1 in 5902 Vertical Accuracy 1 in 12,000

We closed back upon our first monument horizontally 1 in 25,000 as a check.

File HM-C

Sludge Drying Beds and Old Pesticide Area

13 Soil Borings 6 Monitor Wells

7 SG Points

IT Drawing # 409832 Fig. 5.3 and 5.7

Horizontal and Vertical Control was established for (13) Soil Borings, (6) Six Monitor wells and (7) SG Points.

BM SE-41, SE-45 and SE-47 were used for control.

Horizontal Accuracy 1 in 8725 Vertical Accuracy 1 in 390,000

We closed back upon BM SE-45 as a check and closed 1 in 14,000 Horizontally.

FileHM-D

Fuel Truck

- (8) Soil Borings
- (3) Monitor Wells
- (3) SG Points

1T Drawing #409832 Fig. 5.4

Horizontal and Vertical Control was established for (8) Soil Borings, (3) Monitor wells and (3) SG Points.

BM PR-02, SE-16 and PR-03 were used for control.

Horizontal Accuracy 1 in 22,586 Vertical Accuracy 1 in 20,000

File HM-E

Ordnance Disposal Area

- (5) Soil Borings
- (4) Corners of area as per staked and Dan McGregor's instructions.

IT Drawing #409832 Fig. 5.1

Horizontal and Vertical Control was established for (5) Soil Borings, (4) Corners of area. BM SE-19, PR-02 and SE-016 were used for control.

Horizontal Accuracy 1 in 10,000 Vertical Accuracy 1 in 20,000

File HM-F

Fire Training Area 2

(8) Monitor Wells

IT Drawing #409832 Fig. 5.8

Horizontal and Vertical Control was established for (8) Monitor Wells.

BM SE-37, SE-33 and BM32 were used for control.

Horizontal Accuracy 1 in 34,800 Vertical Accuracy 1 in 95,000

File HM-G

AFFF Fire Control Pond

(4) Soil Borings

IT Drawing #409832 Fig. 5.2

Horizontal and Vertical Control was established for (4) Soil Borings.

BM SE-31, SE-22 and PR-01 were used for control.

Horizontal Accuracy 1 in 6500 Vertical Accuracy 1 in 58,000

Shots Typical

Soil Borings-

One X,Y,Z placed center of drill hole, typically on top

of concrete fill-in area. (36) Total Soil Borings

Monitor Well-

(Flush mount) Three X,Y,Z,s were placed upon each well.

1: NW Corner of concrete pad.

2: Top of retaining casing, where well number was stamped into a milled area.

3: Top of well, under seal, (X,Y determined for center, and Z determined at north lip of well.

(Tower Mount) Three X,Y,Z,s were placed upon each well.

1: NW Corner of concrete pad.

2: Top of square guard, center

3: Screw cap removed, X and Y in Center and Z on the North lip of well.

(17) Total Monitoring wells. 51 points.

In addition; we determined X,Y and Z for a number of SG points. These were determined at center of dig point.

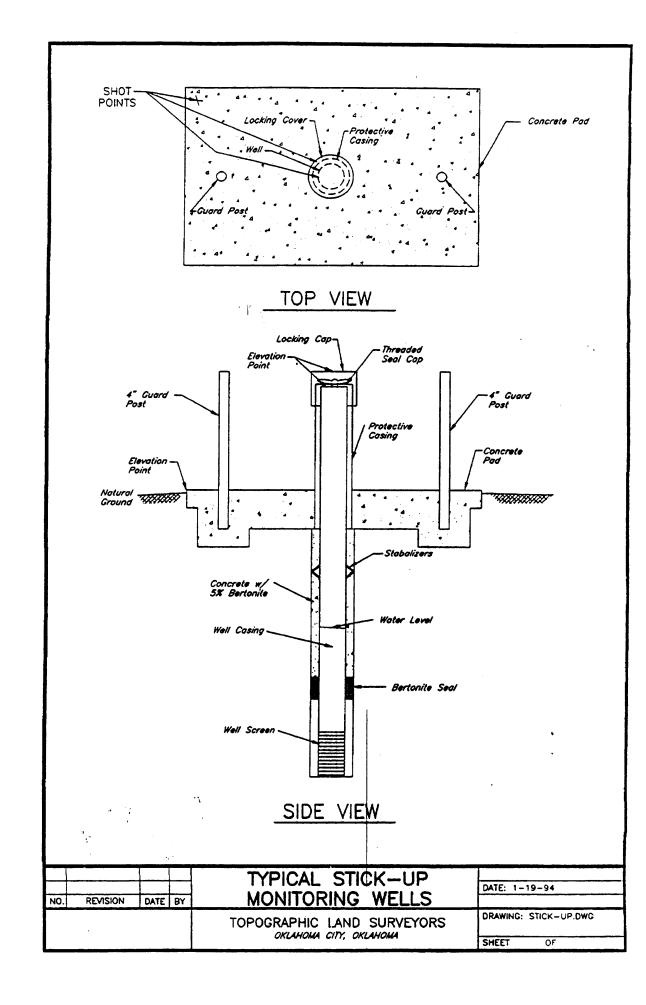
In addition; we determined X,Y and Z for four corners of an area in the Ordnance Disposal area as per Dan McGregor's instructions. These points were stakes set by previous contractor.

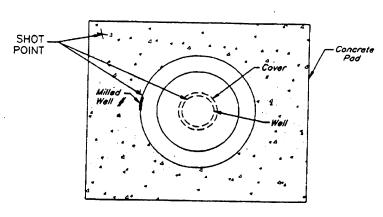
Included in this report are two drawings showing typical well layouts.

Drawing

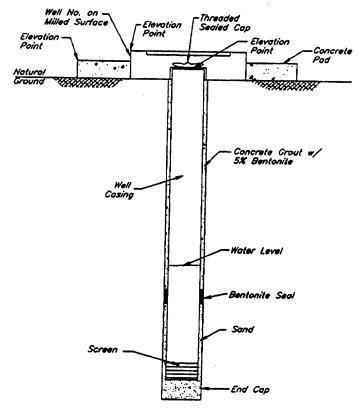
Flush.Dwg

Tower.Dwg





TOP VIEW



SIDE VIEW

NO. REVISION	DATE BY	TYPICAL FLUSH MOUNT MONITORING WELLS	DATE: 1-18-94
		TOPOGRAPHIC LAND SURVEYORS OKLAHOMA CITY, OKLAHOMA	DRAWING: FLUSH.DWG SHEET OF

Tinker AFB	Factors	
	Factors.txt	
Calculations for Grid Distance		
		······································
Formula Used 1-(1250)/(20,906,000)	0.9999402086	Elevation Factor
Elevation average is 1250		
- 10		
Grid Factor from USGS Tables		
Verage Latitude is 35-25	1.0000306000	Grid Factor
ombination Factor is multiple of these	0.9999708067	Combo Factor

Diskette Files

Disk Labeled IDO-5001

#547295

Text Files and Final Reports

FILE NAME

DESCRIPTION

Report WPS Microsoft Works file of final report

Report.TXT ASCII file of final report.

Finals. WB1 Quattro Pro for Windows data base

All areas, control and Factors

NAD-83, NAD-27

Finals.WK3 1-2-3 V.3.x database

All areas, control and Factors

Hcl.TXT ASCII of HCL Area Spill.TXT ASCII of Spill Pond

Sludge.TXT ASCII of Sludge and Pesticide

Fuel.TXT ASCII of Fuel Truck
Ordance.TXT ASCII of Ordnance area
Fire.TXT ASCII of Fire Training
FireC.TXT ASCII of Fire Control

NAD83.TXT ASCII of X,Y,Z and Description NAD27.TXT ASCII of X,Y,Z and Description

Control.TXT ASCII of X,Y,Z and Description of control monuments.

Factor.TXT ASCII of grid/elevation factors used in calculations.

State Plane Lambert Coordinate Systems Oklahome North Zone Values in Feet	Tale System		The second secon	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		The state of the s		And in case of Females, Spinish or other Persons and P	
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Values in Feet	***		Methors X 3 2R0R33337						
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	SE32		M. 64 5 4 2 6 5 5 5	45431.969	655045.990			149076353	2180694 179
	SE43	Tronus .	12.03	46303.717	654817.311			151886.413	2178943.944
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	PR02:	307412-1	31.02	44519.766	656757.523		2154711975	146035508	2186309.389
	SE15	10 K	287.22	44874.549	656322.201		2155285 757	147188.504	2184881.187

	SE 10	38.4.4.1.285.0E	ZESET	45464.255	656655.015		2154375 002	149134.216	2185973.103
	PR03	298.292.1.3EC.72	2 24	45229.480	657014.725		2155586 911	148383.948	2187153 241
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	SE19	3	287.80	44134.062	656649.276		2154386 B37	144770.084	2185954 242
	SE33	381,161	120021	45572.014	654847.132		10/4	148487.824	2180041.762
	SE38	į	1280.00	45560.105	653975.745			149448.783	2177182.896
		Š	1,250	45726.546	654009.317		18 1	149994 849	2177293 048

	Elevation Factor		Grid Factor	Combo Factor	
	0.9998402086		1.0000306000	0.9999708067	
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	1-(1250)/[20,906,000]				
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Tinker AFB	Calculations for Grid Designation for Grid Designation (1980)	actor from USAS T	Average Latitude is 35-25	Combination Factor is me	

Topographic HM-A File	HM-A File	HCL Tank								
	NAD-83 Feet			MATERIAL						
Description.	Activities Northing	Easting	Elevation	Northing		Easting Elevation	Northing		Easting Elevation	
SB-045	153284.190	2153636.064	1275.110	46721.114	656.429.578	388 654	153257 757	153257 757 2 185 233 520	1275 110	
SB-044			1275.980	46890.068	ŀ		153812.059	153812.059 2.185.218.954		
SB-042		2153620.517 1276.230	1276.230	46985.016	l		154123.573	154123.573 2.185.217.979 1276.230	1276.230	
SB-043			1275.830	47075.075	656,419.950		15419.041	154419.041 2,185,201.941	1275.830	
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Topographic HM-B File		Spill Pond							
	NAD-83 Feet			N.A.D853 Modern			TOWN		
Description Northing		Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation
\$8-019	150763.571	150763.571, 2148028.472	1227.435	45952.828	45952.828 654,720.380	374.123	150737.212	150737.212 2,179,625.925	1227.435
SB-020	150782.180	150782.180 2148011.904	1226.202	45958.500	654,715.330	373.747	150755.821	150755.821 2,179,609.357	1226.202
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				3.28083337				_	
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Topographic	HM-C	Sludge and Pesticide	ticide	Conversion	3.6000327				
	NAD-83 Feet			MAD 62 Motors		•	NACES	į	ê.
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000	150010 084	2145AR7 27R	1226 929	46729.667	654006.782	373.969	153285.911	2177284.758	1226.929
0000	103316.634		1225 980	46740.210	654005.748	373.673	153320.501		1225.960
2000	135340.046	1.		46745.833	654005.870	373.730	153338.949		1226.145
SB-031	133303.208	1		46746 307	654012.152	373.693	153340.504	2177302.376	1226.028
SB-032	133300.043			18747 283	654018.384	373.748	153343.640	2177322.855	1226.205
SB-033	153369.962		507.077	46746 485	854028 099	373 650	153341.088	2177348.133	1225.884
SB-034	153367.428		500 C77	970	660000 724	274 204	153301 184	2177258 344	1227.987
NWCorPad	153327.504		1227.987	46/34.310	003880.731	274 270	462300 207		1228 252
BrassTad	153325.646		1228.252	46733.750	823888 JAR	3/4.3/2	100,000,001	1	1227 880
WWD-67A	153325.656	2145662.944. 1227.880	1227.880	46733.753	653989.366	374.259	10358031	1	1227.000
NWCorPad	153334 792		1227.942	46736.538	653998.580	374.277	153308.454		1200 136
DeseTan	15333 586		1228 138	46735.865	653999.3051	374.337	153306.246	_	1220.130
DE SCHOOL	15333 100		1227 749	46736.025	653999.218	374.219	153306.771		122/ /49
0.0-7AV	452204 250		1227 875	46724.183	653998.924	374.257	153267.920		1227.875
20-021	EC7-48790	Т	1227 450	46788 391	653997 296	374.128	153478.575		
SG-027	153504.913		1227 722	4A782 3A9		374.226	153458.818	2177266.025	
NWCorPad	153485.150	1	1007.003	46781 ROS		374 293	153456.321	2177268.214	
BrassTag	153482.661		768.177	2000		374 185	153456 977	2177267.817	1227.639
MW2-68A	153483.317		1227.039	10/04		374 215	153471 990	2177265.458	1227.737
NWCorPad	153498.329		1221.131	100.00.00	654001 484	274 224	153471.006	L	1227.801
BrassTag	153497.345		100.777	46786 043		374 143	153470.445	L	1227.501
MW2-68B	153496.783		100,777	46700 860		373 634	153486.704	1 2177283.644	1225.832
SB-035	153513.044	Ţ	760.6771	46776 208		373 742	153435.613	3 2177169.986	1226.184
SB-041	153461.953		1220.184	DET.C110#		374 008	153377 514	L	Į.
SG-045	153403.851	1	122	100.10104	1	274 100	153451 811	1_	L
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SB-039	153436.514	_	9	A07 67 64		373 493	153395,948	_	1225.367
SB-040	153422.287	1	-1.	46703 080			153493.958	8 2177306.573	
SB-036	153520.297		- 1	46704 724		İ.	153489.509	9 2177320.543	3 1225.822
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SG-030	15358/868	7145051.021		46805 591		_	153535.004	_	
SG-034	153561.340	1		46795 922	L.	L.	153503.281	1 2177378.177	
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	NAD-83 Feet		_	NAD-63 Meters		*			
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	1	1	1705 111	289 84534	656931 293	394.852	148749.069	2186879.522 1295.444	1295.444
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MW2-59	9 148773.597	2155283.829	1297.780	433.040.203			410064 470	2484724 A4K 4205 5A1	1205 503
NWCorPad	L	L	1285.503	45318.033	656866.028		140004-0/0	200 0010010	4207.000
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900-00		1		45328.543	Ĺ	394.802	148688.959	2186731.291	1295.280
20-00		┸		45337.436	656883.600	394.820	148718.136	2186723.049 1295.337	1295.337
20-02		2466424 227	1	15315 412	L	L	148744.402	2186718.650 1295.452	1295.452
470-05		1	ľ	45348 273		394 912	148747.128	2186749.887	1295.640
SB-023		4		C1770#C54			148785 875	2186766 271	1295,340
SG-003		2155168.857		45351.807			449783 832	2188704 DDS 1295 427	1295 427
SB-021	1 148790.269		1295.427	45351.364		1	140,000	AND 3001 1000 000 10	4 205 BAA
SB-022		2155095.618	1295.804	45344.387			140/40.94	CO.CO00017	200
SR-027	Ĺ	L	1295.822	45326.328	656874.326		148681.693	770.0871 623 7800017	770.CR71
PROPOSO NAME		L	1295.791	45337.508	656873.609	394.958	148718.373	2186680.2/1	1295/81
D. MANAGE		L	1	45337.244	656873.854	394.988	148717.506	2186691.074	
Brassing		2155002 500		45337.048	L		148716.863	2186691.012	1295.587
NO-7MM	140/42.69	10	6						
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			-	NA Contract			NAD-22	3	
Description Northino	Northino	Easting	Elevation	Northing		Easting Elevation	Northing		Easting Elevation
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CB 014	CB 014 146445 086	2154383 435	1311.061	44636.551	656657.377	399.612	146418.665		1311.06
SP 043	SR 043 146413 073	1		44626.793		399.341	146386.651		8 1310.17
\$ 00 as	CB 044 148447 893		1310,433	44637.407	656641.089	399.421	146421.474		3 1310.43
CB 612	SP 012 146465 811	L	ľ	44642.868			146439.390		8 1310.47
SPAIN	SP-010 146542 271	L		44686.173	656645.299	399.691	146515.850		1311.31
NACOSite	146721 400	-		44720.772			146694.980		1309.81
CARCOCAG	SMC0546 148451 388	1		44638.472	856597.831	398.835	146424.989		4 1308 51
OE Conside	SECorette 146305 859	2		44594.115	5 656686.488	398.808	146279.439	139 2186076.341 1308.422	1 1308.42
NECOCKE	NECOCKE 146573 205	21		44675.602	2 656727.004	398.131	146546.781	781 2186209.268	8 1306 203
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	21.12 27.12 27.18 27.18 27.18 27.18 27.18 27.18 27.18	2150362.314 2150362.314 2150361.243 2150361.820 2150370.487 2150370.314 2150437.446 2150437.446 2150437.446 2150437.914 2150443.373		45872.251 45871.488 45871.482 45871.387 45870.598	655431.737 655431.410 655431.410 655431.617	Elevation 270 917	Northing 150472.826		Elevation
		2150362.314 2150361.243 2150361.243 2150361.820 2150369.766 2150370.314 2150435.848 2150437.446 2150437.914 2150437.914		45672.251 45671.488 45871.452 45871.387 45870.598	655431.737 655431.410 655431.617	270 017	150472.826	┙	
		2150362.314 2150361.243 2150361.243 2150370.487 2150370.314 2150437.446 2150437.446 2150437.914 2150447.608		45872.251 45871.488 45871.452 45871.387 45870.598	655431.737 655431.410 655431.617 655431.933	270 047	150472.826	ļ.	
		2150361.243 2150361.820 2150361.820 2150370.314 2150370.314 2150437.446 2150437.446 2150437.914 2150437.914		45871.488 45871.452 45871.387 45870.677 45870.598	655431.410 655431.617 655431.017	2/0.01/			1246.117
		2150361.620 2150361.620 2150369.766 2150370.314 2150435.848 2150437.446 2150437.914 2150437.914		45871.452 45871.387 45870.677 45870.598	655431.617	379.883	150470.323	2181858.686	1246.334
		2150370.487 2150369.768 2150370.314 2150435.848 2150437.446 2150437.914 2150437.914		45871.387 45870.578 45870.598	AKK424 224	379.797	150470.205		1246.052
		2150369.766 2150370.314 2150435.848 2150437.446 2150437.814 215043.373		45870.598	1.01.10	379.705	150469.991		1245.748
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Ĺ	50416.351	2150445.576	1243.387	45846.995	655457.115	378.985	150389.964		1243.387
	Ļ	2150540 674		45864.032	655486.101		150445.859		1248.052
PDASSTAG 15047	1	2150542 460		45863.679	655486.645		150444.701		1246.266
	1	2150543 115		45863.623	655486.845	379.783	150444.517	7	1245.940
	┸	21EAKKS KAR	ľ	45865.076	655489.732	379.906	150449.284	2182150.03	1246.409
	150474 264	24 50 554 084	ľ	45864.643	655490.188	379.943	150447.863	2182151.526	1246.531
	107.67	200000		45884 651	655490 383		150447.890	L	1246.213
	1304/4/2/0	2450500 448		45941 404	655501.180		150699.702	2182187.591	1251.120
	190,00,001	2150590-140		45940 970	655502 074		150698.278	2182190.524	1251.270
	50724.000	2450502 440	1250 976	45940.971	655501.879		150698.281	L	1250.976
MWZ-034	150740 SAR	2150583 419	1250 939	45945.810	655499.130	381.287	150714.157		1250.939
	10770 484		1251 089	45945.394	855499.650	381.333	150712.792	2182182.571	1251.089
	2000		1250 812	45945.419	655489.842	381.248	150712.875	2182183.201	1250.812
MWZ-65B 1507.	130/38/203	7.1	210.0000						
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Description NAD-83 Feet Elevation SB-016 147211.133 2150886.702 1268 631 SB-017 147032.432 2150886.702 1268 631 SB-016 146809.976 2150890.028 1270 361 SB-015 146611.995 2150890.336 1275 957	Elevation 86 702 1288 631	NAD-ES Mexicos Northing	100				
NAD-83 Feet Eription Northing Eription Northing Eription 147211.133 1476809.976 146611.995	Elevation 86 702 1268 631		2000				
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147032 432 146809 976 146611 995			655,591.571 386.679	386.679	147184.752	147184.752 2,182,484.119	1268.631
146809.978	89.734 1270 361	44815.574	655,592.495 387.207	387.207	147006.049	147006.049 2,182,487.149	1270.361
146611 995	90 028 1273 784	4171.770	655,592.584	388.250	146783.596	146783.596 2,182,487.440	1273.784
	90 336 1275 957	44687 425		388.912	146585.615	146585.615 2,182,487.746	1275.957
		Conversion Factor			NAD-27 Derived		
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\$B-046	Coordinates in NAD 27 (Feet)		
\$B-044				
\$B-044	SB-046	153257 757	2195222 520	4075 44
\$B-042 154123.573 2185271.979 1276.25 8B-043 154419.041 2185201.941 1275.6 8B-049 15073.7212 2179625.825 1227.4 8B-049 150755.821 217960.9357 1226.2 8B-029 153285.911 2177281.385 1226.9 8B-029 153285.911 2177281.385 1226.9 8B-030 153320.501 2177281.385 1226.9 8B-031 153339.949 2177281.786 1228.04 8B-032 15339.949 2177381.385 1226.9 8B-032 15339.949 2177381.385 1226.9 8B-033 153349.504 2177382.2655 1226.02 8B-033 153349.504 2177382.2655 1226.02 8B-033 153349.504 2177382.855 1226.02 8B-033 153349.940 2177389.347 1227.89 MW2-67A 153299.317 2177259.344 1227.94 MW2-67A 153299.317 2177259.479 1228.25 MW2-67A 153299.317 2177259.479 1228.25 MW2-67A 153299.317 2177259.471 1227.83 63-021 153267.950 2177259.577 1227.87 8G-0-27 153476.575 2177255.637 1227.87 8G-0-27 153476.575 2177258.637 1227.87 8G-0-27 153476.575 2177258.241 1227.94 MW2-67B 153396.871 2177259.241 1227.94 MW2-67B 153498.819 2177268.244 1227.98 MW2-67B 153498.819 2177268.244 1227.98 MW2-67B 153498.819 2177269.2 2177269.2 1227.77 8G-0-27 153476.575 2177258.537 1227.67 MW2-67B 153498.8077 2177269.2 127727 8G-0-27 153476.575 2177259.548 1227.73 8G-0-27 153476.575 2177259.548 1227.73 8G-0-27 153476.957 2177295.548 1227.73 8G-0-27 153476.957 2177295.548 1227.73 8G-0-27 153476.957 2177295.548 1227.73 8G-0-27 153476.957 2177295.548 1227.73 8G-0-27 153476.957 2177295.488 11 2277.73 8G-0-27 1227.67				1
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8B-020 150755 821 2170600 357 1226 21 8B-030 153285 911 2177284 758 1225 91 8B-031 153325 501 2177281 756 1225 91 8B-031 153325 501 2177281 756 1226 91 8B-031 153335 949 2177281 756 1226 91 8B-033 153345 504 2177302 376 1228 02 8B-033 153345 604 2177342 855 1226 20 8B-034 153341 088 2177342 855 1226 20 8B-034 153341 088 2177348 31 31 225 88 NWCorPad 153301 154 2177258 344 1227 88 BrassTag 153258 307 2177259 379 1228 257 MW2-678 153305 44 2177250 379 1228 257 MW2-678 153306 454 2177250 379 1228 257 MW2-678 153306 454 2177250 346 1227 92 8 BrassTag 153306 246 2177250 941 1227 72 8 0-021 153267 920 2177259 941 1227 72 8 0-021 153267 920 2177258 977 1227 8 0-021 153267 920 2177258 977 1227 8 0-021 153267 870 20 2177258 977 1227 8 0-021 153267 870 20 2177258 977 1227 8 0-021 153267 870 20 2177258 977 1227 8 0-021 153267 870 20 2177258 977 1227 8 0-021 153267 870 20 2177258 977 1227 8 0-021 153267 870 20 2177258 977 1227 8 0-021 153267 870 20 2177258 977 1227 8 0-021 153267 870 20 2177258 977 1227 8 0-021 153267 870 20 2177258 977 1227 8 0-021 153267 870 20 2177258 977 1227 8 0-021 153267 870 20 2177258 977 1227 8 0-021 153267 870 20 2177258 177 1227 8 0 0-021 153267 870 20 2177258 177 1227 8 0 0-021 153267 870 20 2177258 177 1227 8 0 0-021 153267 870 20 2177258 2177 1227 8 0 0-021 153267 870 20 2177258 217 1227 8 0 0-021 153267 870 20 2177258 217 1227 8 0 0-021 153267 870 20 2177258 217 1227 8 0 0-021 153267 870 20 2177258 217 1227 8 0 0-021 153267 870 20 2177258 217 1227 8 0 0-021 153267 870 20 2177258 217 1227 8 0 0-021 153267 870 20 2177259 217 1227 8 0 0-021 153267 870 20 2177259 217 1227 8 0 0-021 153267 870 20 2177259 217 1227 8 0 0-021 153267 870 20 2177259 217 1227 8 0 0-021 153267 8 0-021 127 127 8 0 0-021 127 127 8 0 0-021 127 127 8 0 0-021 127 127 8 0 0-021 127 127 8 0 0-021 127 127 8 0 0-021 127 127 8 0 0-021 127 127 8 0 0-021 127 127 8 0 0-021 127 127 8 0 0-021 127 127 8 0 0-021 127 127 8 0 0-021 127 127 8 0 0-021 127 127 8 0 0-021 127 127 8 0 0-021 127 127 8 0 0-021 127 127 8 0 0-021 127 127 8 0 0-021	SB-019			
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8B-034 153301164 2177268.341 1227.88 NWCorPad 153301.64 2177258.344 1227.88 BrassTag 153299.307 2177259.979 1228.25 MW2-67A 153299.317 2177259.879 1228.25 MW2-67B 153308.454 2177257.848 1227.94 BrassTag 153306.771 2177259.941 1227.74 8G-021 153206.771 2177259.941 1227.74 8G-021 153206.771 2177259.941 1227.74 8G-021 153206.771 2177259.941 1227.74 8G-021 153206.771 2177258.027 1227.87 NWCorPad 153408.818 2177268.025 1227.77 BrassTag 153458.321 2177268.025 1227.77 BrassTag 153458.921 2177268.261 1227.99 MW2-68A 153458.977 2177267.917 1227.63 NWCorPad 153458.818 2177267.9377 1227.63 MW2-68B 153471.008 2177267.9377 1227.60 MW2-68B 153475.445 2177267.505 1227.50 SB-038 153445.704 2177267.935 1227.50 SB-038 153456.704 2177268.346 1227.37 SB-046 153475.514 2177169.986 1228.18 SG-046 153377.514 2177169.986 1228.18 SG-046 153377.514 2177169.986 1228.18 SG-048 153458.610 1771740.077 1225.56 SB-038 153468.704 2177186.420 1225.18 SB-039 153410.174 2177186.420 1225.18 SB-039 153410.174 2177186.265 1227.39 SB-038 153498.998 2177300.573 1225.40 SB-039 153410.174 2177186.420 1225.18 SB-039 153410.174 2177186.420 1225.18 SB-039 153458.999 2177320.573 1225.40 SB-038 153499.998 2177300.573 1225.40 SB-039 153456.991 2177320.573 1225.50 SB-038 153499.998 2177300.573 1225.40 SB-039 153456.991 2177320.573 1225.50 SB-038 153498.999 2177320.573 1225.50 SB-038 153498.999 2177320.573 1225.50 SB-039 153475.190 2177490.771 1225.36 SB-038 153498.999 2177320.573 1225.50 SB-039 153475.190 2177490.777 1225.50 SB-039 153475.190 2177490.777 1225.50 SB-039 153475.190 2177490.777 1225.50 SB-038 153498				1226.02
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BrassTag				
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### SB-035 153486,704 2177283.644 1225.83 ### SB-045 153486,704 2177283.644 1225.83 ### SB-045 153456133 2177145,766 1227.35 ### SG-045 153377.514 2177145,766 1227.35 ### SG-043 153451,811 2177145,766 1227.36 ### SB-039 153410,174 217714,077 1225.36 ### SB-039 153495,948 2177170,05.573 1225.40 ### SB-036 153493,958 217730,573 1225.40 ### SB-038 153489,394 217730,573 1225.80 ### SB-038 153489,394 217736,511 1225.39 ### SG-030 153561,649 2177378,069 1228.26 ### SG-034 153535,004 2177378,069 1228.52 ### SG-034 153535,004 2177378,069 1228.52 ### SG-035 153453,004 2177378,069 1228.52 ### SG-035 153457,479 2177489,938 1228.52 ### SG-036 153475,480 2177490,122 1228.42 ### SG-036 153475,480 2177490,122 1228.42 ### SG-037 153475,480 2177490,122 1228.42 ### SG-038 153486,081 2177491,772 1228.76 ### SG-038 153486,081 2177491,772 1228.60 ### SG-038 153486,081 2177491,772 1228.60 ### SG-038 153486,081 2177491,772 1228.00 ### SG-038 153486,081 2177491,772 1228.00 ### SG-039 148747,183 2186881,244 1297.78 ### SG-039 148747,183 2186881,244 1297.78 ### SG-039 148652,928 218673.2714 1297.66 ### SG-037 148652,928 218673.2714 1297.66 ### SG-037 148652,928 218673.1015 1295.503 ### SG-037 148657,198 218678,331 1293.606 ### SG-037 148657,198 218678,331 1293.606 ### SG-037 148657,198 218678,331 1293.606 ### SG-037 148658,094 218678,331 1293.606 ### SG-037 148657,998 218679,005 1295.402 ### SG-037 148658,094 218679,303 1295.640 ### SG-037 148658,094 218679,303 1295.640 ### SG-037 148657,098 218679,005 1295.547 ### SG-037 148657,098 218679,005 1295.547 ### SG-037 148688,059 218679,005 1295.547	BrassTag	153471.008		
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\$G-043			2177169.986	1228.184
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Brasstag	150470.323	2181958.686	1246.334
MW2-64A	150470 205	2181959.365	1246.052
NWCorPad	150469.991	2181967.941	1245.748
BrassTag	150467.662	2181967.209	1245.897
MW2-64B	150467.403	2181967.757	1245.586
NWCORPAD	150387.380	2182033.291	1243.361
BRASSTAG	150386.585	2182034.889	1243 561
MW2-63B	150386.113	2182035.358	1243.284
NWCORPAD	150391.093	2182040.817	1243.630
BRASSTAG	150390.611	2182043.052	1243.790
MW2-63A	150389.964	2182043.019	1243.387
NWCORPAD	150445.859	2182138.117	1246.052
BRASSTAG	150444.701	2182139.902	1246.266
MW2-62B	150444.517	2182140.558	1245.940
NWCORPAD	150449.284	2182150.03	1246.409
BRASSTAG	150447.863	2182151.526	1246.531
MW2-62A	150447.890	2182152.166	1248.213
NWCORPAD	150699.702	2182187.591	1251.120
BRASSTAG	150898.278	2182190.524	1251.270
MW2-85A	150698.281	2182189.884	1250.976
NWCORPAD	150714.157	2182180.865	1250.939
BRASSTAG	150712.792	2182182.571	1251.089
MW2-65B	150712.875	2182183.201	1250,812
SB-018	147184.752	2,182,484.119	1288.631
8B-017	147006.049	2,182,487.149	1270.361
8B-016	146783.596	2,182,487.440	1273.784
8B-015	146585.615	2,182,487.746	1275.957
400-27			

NR0-27

Coordinates in NAD 83		
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46985.016	656424.839	388 919 SB-044
47078.076	656419.950	388.996 SB-042
45952.828	654720.380	388.874 SB-043
45958,500	654715.330	374.123 SB-019 373.747 SB-020
46729.667	654006.782	373 969 SB-029
46740.210	654005.748	373.673 SB-030
46745.833	654005.870	373.730 SB-031
46746,307	854012.152	373.693 SB-032
46747.263 46746.485	654018.394	373.748 SB-033
48734.318	654026.099	373.650 SB-034
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46733.753	653999.366	374.372 BrassTag
46736.538	653998.580	374.259 MW2-67A 374.277 NWCorPa
46735,865	653999.305	374.337 BrassTag
46736.026	653999.218	374.219 MW2-67B
46724.183	653998.924	374.257 SG-021
46788.391	653997.296	374.128 SG-027
46782.369	654001.072	374 226 NWCorPac
46781,608	654001.739	374.293 BressTag
46781.808	654001.618	374.185 MW2-68A
46786.384 48786.084	654000.899	374.215 NWCorPac
46788.913	654001.484	374.234 BrassTag
46790.869	654001.523	374.143 MW2-68B
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48757.587	653984.417	373.742 SB-041
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46767.542	653980.466	374.109 SG-043 373.437 SB-039
46763.206	653973.046	373.493 SB-040
46793.080	654013.431	373.505 SB-036
46791.724	654017.689	373.631 SB-037
46791.689	654025.604	373.502 SB-038
46813.712	653995.915	374.370 SG-030
46805.591	654035.229	374.456 SG-034
46795.922 46788.058	654035.256	374.525 SG-035
46787.357	654069.321	374.468 NWCorPad
48787.452	654070.050 654069.868	374.535 BressTag
46790.786	654069.377	374.424 MW2-66B 374.435 NWCorPad
46790,376	654069.880	374.478 BrassTag
46790.164	654069.883	374.359 MW2-86A
45346.865	656931.293	394.852 NWCorPad
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46346.263	656931.818	395.564 MW2-59
45318.033	656886.028	394.870 NWCorPad
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48317.671	656886.546	395.530 MW2-61
. 45319.136	656869.910	394.292 SG-011
45318.862	656897.113	394.533 SG-007
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APOSE AAO	656882.259	394.855 SB-024
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45344.387	656874.451	394.962 SB-022
48326,328	656874.326	394.967 SB-027
45337.508	656873.609	394.958 NWCorPad
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45337.048	656873.835	394.896 MW2-60
44636.861	856657.377	399.612 SB-014
44828.793	656648.841	399.341 SB-013
44637.407	656641.089	399.421 SB-011
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	656645.299	399.691 SB-010
44720,772	656638.810	399.232 NWCorSite
44638,472	656597.831	398.835 SWCorSite
44594.115 44676.602	65686.488 656727.004	398.808 SECorSite 398.131 NECorSite

379.883 Bresstag 45871,488 655431.410 45871.452 655431.617 379.797 MW2-64A 655434.231 379.705 NWCorPad 45871.387 379.750 BrassTag 655434.008 45870,677 45870,598 655434.175 379.655 MW2-64B 655454,150 378.977 NWCORPAD 45846.207 379.038 BRASSTAG 45845.965 655454.637 45845.821 655454.780 378.954 MW2-63B 379.059 NWCORPAD 45847,339 655458.444 379.108 BRASSTAG 45847.192 655457.125 45846.995 655457 115 378.985 MW2-63A 45864.032 379.797 NWCORPAD 655486 101 379 863 BRASSTAG 655488 645 45863.679 45863.623 655486.845 379.763 MW2-82B 655489.732 45865,076 378.906 NWCORPAD 379.943 BRASSTAG 45864.643 655490.188 655490 383 379.846 MW2-62A 45864,651 45941.404 655501.180 381.342 NWCORPAD 45940.970 381.388 BRASSTAG 655502.074 381.298 MW2-65A 45940.971 655501.879 45945,810 655499.130 381.287 NWCORPAD 381.333 BRASSTAG 655499.650 45945.394 655499.842 381.248 MW2-65B 45945,419 44870.043 655591.571 386.679 SB-018 387.207 SB-017 655592.495 44815.574 44747.770 655592.584 388.250 SB-016 388.912 SB-015 44687.425 655592.678

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Final Report Phase I RCRA Facility Investigation for Appendix I Sites

VOLUME VI

AOC, Old Pesticide Storage Area



Department of the Air Force Oklahoma City Air Logistics Center Tinker Air Force Base, Oklahoma

September 1994

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List of Acronyms_

AFB Air Force Base

AOC area of concern

CAL corrective action level

CDM CDM Federal Programs Corporation

CEC cation exchange capacity

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

CFR Code of Federal Regulations

cm/sec centimeters per second

CMS Corrective Measures Study

DCE dichloroethene

DCQAP Data Collection Quality Assurance Plan

DERP Defense Environmental Restoration Program

DOD U.S. Department of Defense

DQO Data Quality Objective
DWS drinking water standards

EID Engineering Installation Division

EPA U.S. Environmental Protection Agency

ES Engineering Science

FID flame ionization detector

ft/ft foot per foot

GC/MS gas chromatography/mass spectrometry
HSWA Hazardous and Solid Waste Amendments

IRP Installation Restoration Program

LSZ lower saturated zone

μg/kg micrograms per kilogram μg/L micrograms per liter

MCL maximum contaminant level

mg/kg milligrams per kilogram

mg/L milligrams per liter

MS matrix spike

MSD matrix spike duplicate

msl mean sea level

NCP National Oil and Hazardous Substances Pollution Contingency Plan

NPL National Priorities List

List of Acronyms (Continued)_

OPSA Old Pesticide Storage Area

PA/SI preliminary assessment/site investigation

PID photoionization detector

QC quality control

RCRA Resource Conservation and Recovery Act

RFI RCRA Facility Investigation

RI/FS remedial investigation/feasibility study

RME reasonable maximum exposure

ROD record of decision

RPD relative percent difference

SARA Superfund Amendments and Reauthorization Act

SDB Sludge Drying Beds

SVOC semivolatile organic compound SWMU solid waste management unit

TCE trichloroethene

TSD treatment, storage, and disposal (facility)

USACE U.S. Army Corps of Engineers

USC U.S. Code

USDA U.S. Department of Agriculture

USGS U.S. Geological Survey USZ upper saturated zone

UWBZ upper water bearing zone
VOA volatile organic analysis

VOC volatile organic compounds

Executive Summary

This report provides a summary of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) conducted at area of concern (AOC), Old Pesticide Storage Area (OPSA), Tinker Air Force Base (AFB), Oklahoma. The report has been prepared to determine whether hazardous constituents as defined by federal regulations have been released into the environment from the OPSA. The RFI for this unit has been conducted in accordance with the Work Plan prepared by CDM Federal Programs Corporation (CDM) (1992). This RFI Report presents the following information:

- Site characterization (Environmental Setting)
- · Source term definition (Source Characterization), if any
- Degree of contamination (Contamination Characterization)
- · Identification of actual or potential receptors
- Analytical results and analysis (Data Analysis)
- Identification of groundwater protection standards and action levels for the protection of human health and the environment (Protection Standards)
- Conclusions and recommendations for future work.

Tinker AFB is located in central Oklahoma, in the southeast portion of the Oklahoma City metropolitan area, in Oklahoma County. The Base is bounded by Sooner Road to the west, Douglas Boulevard to the east, Interstate 40 to the north, and Southeast 74th Street to the south. The Base encompasses approximately 5,000 acres.

Background. Tinker AFB began operations in 1942 and serves as a worldwide repair depot for a variety of aircraft, weapons, and engines. These activities require the use of hazardous materials and result in the generation of hazardous wastes. These wastes have included spent organic solvents, waste oils, waste paint strippers and sludges, electroplating wastewaters and sludges, alkaline cleaners, acids, FreonTM, jet fuels, and radium paints.

In 1984, Congress amended the RCRA with the Hazardous and Solid Waste Amendments (HSWA), which allow U.S. Environmental Protection Agency (EPA) to require, as a permit condition, a facility to undertake corrective action for any release of hazardous waste or

constituents from any solid waste management unit (SWMU) at a treatment, storage, and disposal (TSD) facility. On January 12, 1989, Tinker AFB submitted its Part B permit application for renewal of its operating RCRA Hazardous Waste Storage facility permit. The final RCRA HSWA permit issued on July 1, 1991, requires Tinker AFB to investigate all SWMUs and AOCs and to perform corrective action at those identified as posing a threat to human health or the environment. The permit specifies that an RFI be conducted for 43 identified SWMUs and two AOCs on the Base. This document has been prepared to determine whether sufficient investigations have been conducted to meet the permit requirements for the OPSA. Interviews with OPSA personnel at Tinker AFB indicated that no releases occurred.

Source Description. OPSA is located at Building 1005, which is on the west side of the Base just west of Air Depot Boulevard. Building 1005 was constructed as part of a sanitary waste treatment plant that was operational from the early 1950s until 1971. The building reportedly was used to store and mix pesticides, however, the exact dates of these operations are not known. The sanitary waste treatment plant also includes eight sludge drying beds (SDB) that were recently used as a 90-day storage site for hazardous waste drum accumulation. SWMU-14, (SDB) is simultaneously being investigated under this RFI (Volume II).

A source characterization investigation was not conducted or required at this site because the practice of storing and mixing pesticides has been stopped and there are no source materials at the site.

Site Investigations. During the RFI performed at OPSA, a total of 13 soil samples were collected from the three soil borings performed at this AOC for chemical analysis. The analysis included volatile and semivolatile organic compounds, metals (aluminum, silver, arsenic, barium, beryllium, cadmium, chromium, chromium VI, copper, iron, lead, mercury, nickel, and zinc) and organic analyses included volatile and semivolatile compounds. A soil gas survey was performed at OPSA consisting of three vapor gas survey points situated west of the site. The only compound detected during the soil gas survey was 1,1-dichloroethene (DCE), which was reported in SG-045 at 5.9 micrograms per liter (µg/L). The analytical results from the soil gas survey are qualitative only and do not have a direct correlation with VOC-impacted soil. The three soil borings did not confirm the presence of DCE in the soils at the OPSA site.

Soil analyses for metals from the borings indicated no analities at or above SWMU corrective action level (CAL).

During the RFI at OPSA no groundwater samples were collected, thus no information regarding groundwater quality is available from this investigation. The three soil borings drilled at this AOC were advanced down to the top of the first water encountered. The depth to water in the borings as documented by the site geologist from boring logs ranged from 13.7 feet below ground surface (bgs) to 15.9 feet bgs.

Conclusions. The Phase I RFI conducted at this AOC indicated that the soil samples collected from the three soil borings drilled resulted in concentrations of metals below SWMU CALs. The analytical results indicate that no impacts to the environment are present at the OPSA. Groundwater was not sampled during the investigation, thus no information regarding groundwater quality was available for the site.

Recommendations for Additional Work. Based on evaluations of available data, there is no evidence of contamination at the OPSA; therefore, no corrective measures are presently recommended. Because no groundwater data have been collected from this site, it is reommended that before the OPSA is closed as an AOC, groundwater data should be collected to support conclusions or recommendations made for site closure. During the Phase II RFI, downgradient monitoring wells should be installed to monitor the shallow Hennessey groundwater in the immediate vicinity of the OPSA.

Site-specific soil background samples were not collected, nor were the soil background values available for inclusion in this Phase I RFI report. Therefore, it is recommended that site-specific soil samples from uncontaminated areas be collected for analysis during the Phase II RFI field work. This additional information along with the USGS background values should be used in the Phase II report to distinguish site-related from background concentrations in a statistically significant manner.

1.0 Introduction

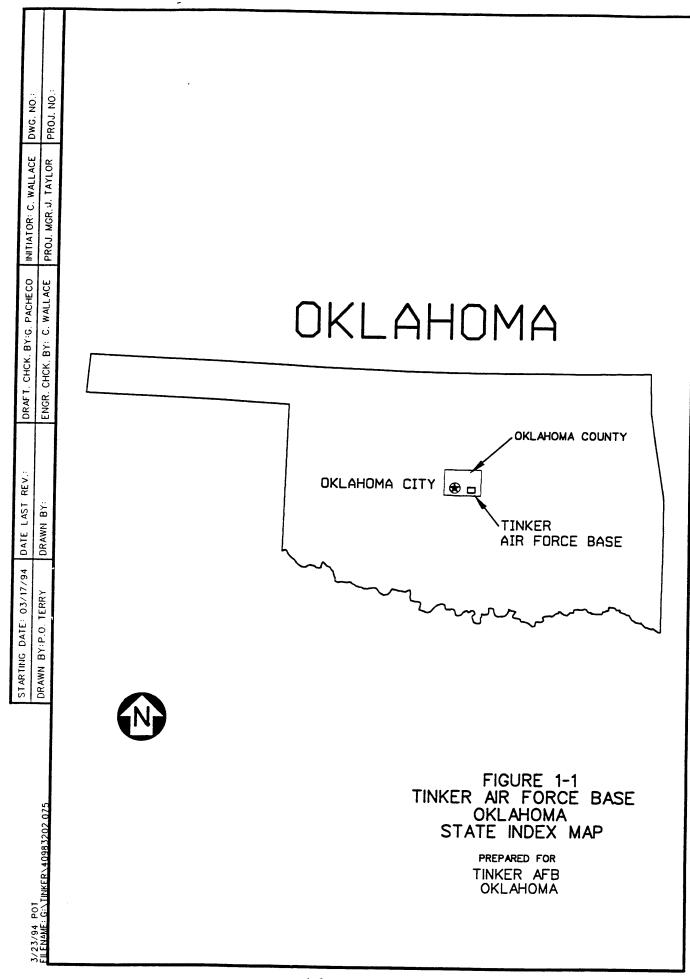
The U.S. Department of the Air Force is conducting an Installation Restoration Program (IRP) at Tinker Air Force Base (AFB), Oklahoma (Figure 1-1). This program intends to identify sites through initial assessments, characterize each solid waste management unit (SWMU) or area of concern (AOC), study and select cleanup methods, if required, and implement a cleanup. In support of this effort, a Phase I Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) was conducted at the AOC, Old Pesticide Storage Area (OPSA), at Tinker AFB, Oklahoma (Figure 1-2). This Phase I investigation focuses its efforts on determining if there have been any releases of contamination to the soil resulting from storing and mixing of pesticide materials within the confines of the OPSA.

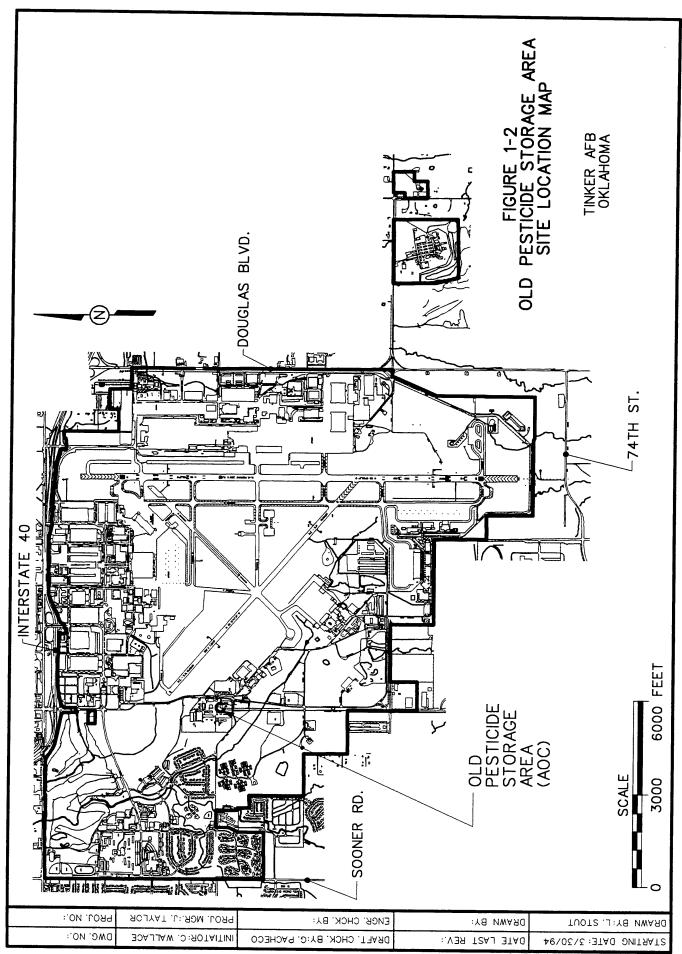
Adequate information must be gathered in a Phase I RFI to support no further action, Phase II investigation, a Corrective Measures Study (CMS), or interim measures, as necessary. A phased approach has been taken by Tinker AFB for the OPSA site investigation. This phasing of the RFI is in accordance with U.S. Environmental Protection Agency (EPA) RFI guidance documents and is also the most practical approach for this site where little or no information is available on past practices.

Outlined below are the minimum tasks generally required by the EPA for a RCRA investigation of a SWMU or AOC:

- Task I Description of Current Conditions
- Task II Work Plan
- Task III Facility Investigation
- Task IV Investigative Analysis
- Task V Report.

The Task I requirements for the OPSA have been addressed in the *Description of Current Conditions* (Tinker, 1992), which outlines the geology, hydrogeology, and current conditions of the site. Task II requirements have been addressed in the *Final RFI Work Plan* (CDM Federal Programs Corporation [CDM], 1992), and the Final RFI Work Plan - Amendments (IT Corporation [IT], 1993a). The *Final RFI Work Plan* and the Final RFI Work Plan - Amendments include a Data Management Plan, Project Management Plan, Data Collection Quality Assurance Plan, Health and Safety Plan, and amendments as necessary to perform a





Phase I RFI. Tasks III and IV requirements, which characterize the site, determine the presence of contamination, and identify actual and potential receptors, have been addressed in this report. This report also satisfies the requirements of Task V.

1.1 Purpose

This report has been prepared in response to the U.S. Department of the Air Force, Tinker AFB, Oklahoma request for a Phase I RFI and report for the OPSA.

The purpose of this report is to document and present the findings of the RFI conducted at the OPSA. The primary objective of the RFI was to determine if contaminant releases to the environment have occurred at the site and to determine if a more comprehensive Phase II RFI or a CMS is required. This RFI Report presents the following information:

- Site characterization (Environmental Setting)
- Source term definition (Source Characterization), if any
- Degree of contamination (Contamination Characterization)
- Identification of actual or potential receptors
- Analytical results and analysis (Data Analysis)
- Identification of groundwater protection standards and action levels for the protection of human health and the environment (Protection Standards)
- Conclusions and recommendations for future work.

This document will also describe the procedures and methods of field sampling and cite any previous investigations conducted at the site.

1.2 Scope of Investigation

Soil samples were taken at various depths at the OPSA to determine the presence of subsurface soil contamination. A soil gas survey was also conducted around the OPSA to determine the presence, if any, of volatile organic compounds (VOC) in the surrounding subsurface soils.

2.0 Background

2.1 Tinker AFB Facility Description and History

Tinker AFB is located in central Oklahoma, in the southeast portion of the Oklahoma City metropolitan area, in Oklahoma County (Figure 1-1) with its approximate geographic center located at 35° 25' latitude and 97° 24' longitude (U.S. Geological Survey [USGS], 1978). The Base is bounded by Sooner Road to the west, Douglas Boulevard to the east, Interstate 40 to the north, and Southeast 74th Street to the south. An additional area east of the main Base is used by the Engineering Installation Division (EID) and is known as Area D. The Base encompasses approximately 5,000 acres.

Tinker AFB was originally known as the Midwest Air Depot and began operations in July 1941. The site was activated March 1942 and during World War II the depot was responsible for reconditioning, modifying, and modernizing aircraft, vehicles, and equipment. Tinker AFB now serves as a worldwide repair depot for a variety of aircraft, weapons, and engines. These activities require the use of hazardous materials and result in the generation of hazardous wastes. These wastes have included spent organic solvents, waste oils, waste paint strippers and sludges, electroplating wastewaters and sludges, alkaline cleaners, acids, FreonTM, jet fuels, and radium paints. Wastes that are currently generated are managed at two permitted hazardous waste storage facilities. Prior to enactment of RCRA, however, industrial wastes were discharged into unlined landfills and waste pits, streams, sewers, and ponds. Releases from these areas as well as from underground tanks have occurred. As a result, there are numerous sites of soil, groundwater, and surface water contamination on the Base.

2.2 Site Description and History

The OPSA is located at Building 1005, which is on the west side of the Base just west of Air Depot Boulevard. Building 1005 was constructed as part of a sanitary waste treatment plant, which was operational from the early 1950s until 1971. The building reportedly was used to store and mix pesticides, however, the exact dates of these operations are not known. The sanitary waste treatment plant also includes eight sludge drying beds (SDB) that were recently used as a 90-day storage site for hazardous waste drum accumulation. SWMU-14, SDB is simultaneously being investigated under this RFI (Volume II).

Building 1005 is constructed of poured in place concrete floors (basement and main floor), basement walls, and roof. The walls on the main floor are constructed of concrete masonry

units. The floors and walls are in good condition. The approximate dimensions of the building are 20 feet wide by 30 feet long. There are two entrances to the building on the main level, a 6-foot wide double door (two 3-foot doors) is located on the front of the building and one 3-foot door is located on the back side of the building. The basement door and stair dimensions make the basement nonaccessible to boring equipment. The basement's floor could have acted as a secondary containment should a pesticide spill have occurred.

Discussions with Base personnel involved with the OPSA during its operation have indicated that there were no releases and that pesticides were stored on the main level. Base personnel also stated that some mixing of pesticides occurred outdoors between Buildings 1005 and 1007. Both of these buildings are slightly elevated with a paved area between the buildings. Observation and inspection of buildings revealed no pesticide containers, appearances, or spills.

2.3 Regulatory History and Status

In 1980, Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to address the cleanup of hazardous waste disposal sites across the country. CERCLA gave the president authority to require responsible parties to remediate the sites or to undertake response actions through use of a fund (the Superfund). The president, through Executive Order 12580, delegated the EPA with the responsibility to investigate and remediate private party hazardous waste disposal sites that created a threat to human health and the environment. The president delegated responsibility for investigation and clean up of federal facility disposal sites to the various federal agency heads. The Defense Environmental Restoration Program (DERP) was formally established by Congress in Title 10 U.S. Code (USC) 2701-2707 and 2810. DERP provides centralized management for the cleanup of U.S. Department of Defense (DOD) hazardous waste sites consistent with the provisions of CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] 300), and Executive Order 12580. To support the goals of the DERP, the IRP was developed to identify, investigate, and clean up contamination at installations.

Under the Air Force IRP, Tinker AFB began a Phase I study similar to a preliminary assessment/site investigation (PA/SI) in 1981 (Engineering Science [ES], 1982). This study helped locate 14 sites that needed further investigation. Phase II studies were performed in 1983 (Radian Corporation [Radian], 1985a,b).

In 1986, Congress amended CERCLA through the SARA, which waived sovereign immunity for federal facilities. SARA gave EPA authority to oversee the cleanup of federal facilities and to have the final authority for selecting the remedial action at federal facilities placed on the National Priorities List (NPL) if the EPA and the relevant federal agency cannot concur in the selection. Congress also codified the DERP (SARA Section 211), setting up a fund for the DOD to remediate its sites because the Superfund is not available for the cleanup of federal facilities. DERP specifies the type of clean up responses that the fund can be used to address.

In response to SARA, the DOD realigned its IRP to follow the investigation and clean up stages of the EPA:

- PA/SI
- Remedial investigation/feasibility study (RI/FS)
- Record of Decision (ROD) for selection of a remedial action
- Remedial design/remedial action.

In 1984, Congress amended the RCRA with the Hazardous and Solid Waste Amendments (HSWA) which allow the EPA to require, as a permit condition, a facility to undertake corrective action for any release of hazardous waste or constituents from any SWMU at a treatment, storage, and disposal (TSD) facility. On January 12, 1989 Tinker AFB submitted its Part B permit application for renewal of its operating RCRA hazardous waste storage facility permit.

EPA, in the Hazardous Waste Management Permit for Tinker AFB dated July 1, 1991, identified 43 SWMUs and two AOCs on Tinker AFB that need to be addressed. This permit requires Tinker AFB to investigate all SWMUs and AOCs and to perform corrective action at those identified as posing a threat to human health or the environment. This RFI Report has been prepared to determine whether sufficient investigations have been conducted to meet the permit requirements for AOC and to document all findings.

2.4 Summary of Previous Investigations

The OPSA was recently added to the IRP, and no previous investigations were conducted at the site. Previous investigations have been conducted at the adjacent SDB and this investigation continues during this RFI (Volume II). Water Supply Well No. 6 is located 300 feet north of Building 1005 and draws water from a depth of approximately 250 feet. No pesticides have been reported in any of the samples routinely collected from this well.

Crutcho Creek lies approximately 1,500 feet to the south of Building 1005. No Base employees currently work at this site.

3.0 Environmental Setting

3.1 Topography and Drainage

3.1.1 Topography

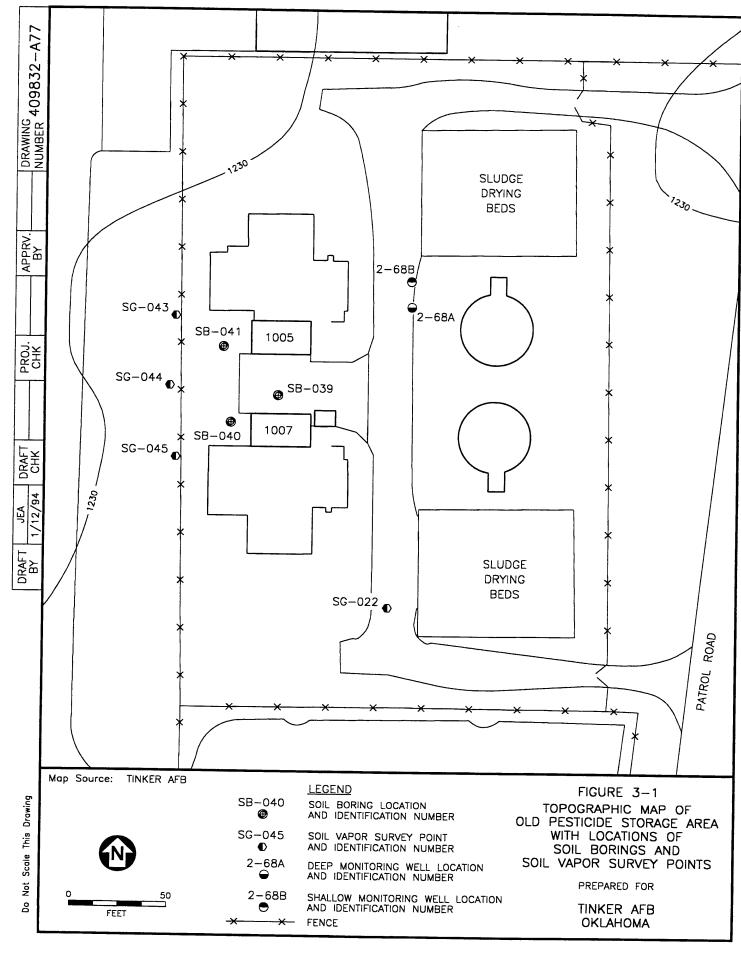
Regional/Tinker AFB. The topography of Oklahoma City and surrounding area varies from generally level to gently rolling in appearance. Local relief is primarily the result of dissection by erosional activity or stream channel development. At Oklahoma City, surface elevations are typically in the range of 1,070 to 1,400 feet mean sea level (msl). At Tinker AFB ground surface elevations vary from 1,190 feet msl near the northwest corner where Crutcho Creek intersects the Base boundary to approximately 1,320 feet msl at Area D (EID), located on 59th Street, east of the main installation.

Site. The OPSA is located on the midwest side of Tinker AFB. From the geologic cross-sections, the general surface elevation of the OPSA is reported to be 1,226 feet msl. A site map showing the surface elevation is included as Figure 3-1.

3.1.2 Drainage

Regional/Tinker AFB. Drainage of Tinker AFB land areas is accomplished by overland flow of runoff to diversion structures and then to area surface streams, which flow intermittently. The northeast portion of the Base is drained primarily by tributaries of Soldier Creek, which is itself a tributary of Crutcho Creek. The north and west sections of the Base, including the main instrument runway, drain to Crutcho Creek, a tributary of the North Canadian River. Two small unnamed intermittent streams crossing installation boundaries south of the main instrument runway generally do not receive significant quantities of Base runoff due to site grading designed to preclude such drainage. These streams, when flowing, extend to Stanley Draper Lake, approximately one-half mile south of the Base.

Site. Surface water runoff at the OPSA discharges to Crutcho Creek, which runs to the southwest of OPSA.



3.2 Geology

3.2.1 Regional/Tinker AFB Geology

Tinker AFB is located within the Central Redbed Plain Section of the Central Lowland Physiographic Province, which is tectonically stable. No major fault or fracture zones have been mapped near Tinker AFB. The major lithologic units in the area of the Base are relatively flat-lying and have a regional westward dip of about 0.0076 foot per foot (ft/ft) (Bingham and Moore, 1975).

Geologic formations that underlie Tinker AFB include, from oldest to youngest, the Wellington Formation, Garber Sandstone, and the Hennessey Group; all are Permian in age. All geologic units immediately underlying Tinker AFB are sedimentary in origin. The Garber Sandstone and Wellington Formation are commonly referred to as the Garber-Wellington Formation due to strong lithologic similarities. These formations are characterized by fine-grained, calcareously-cemented sandstones interbedded with shale. The Hennessey Group consists of the Fairmont Shale and the Kingman Siltstone. It overlies the Garber-Wellington Formation along the eastern portion of Cleveland and Oklahoma counties. Quaternary alluvium is found in many undisturbed streambeds and channels located within the area.

Stratigraphy. Tinker AFB lies atop a sedimentary rock column composed of strata that ranges in age from Cambrian to Permian above a Precambrian igneous basement. Quaternary alluvium and terrace deposits can be found overlying bedrock in and near present-day stream valleys. At Tinker AFB, Quaternary deposits consist of unconsolidated weathered bedrock, fill material, windblown sand, and interfingering lenses of sand, silt, clay, and gravel of fluvial origin. The terrace deposits are exposed where stream valleys have downcut through older strata and have left them topographically above present-day deposits. Alluvial sediments range in thickness from less than a foot to nearly 20 feet.

Subsurface (bedrock) geologic units that outcrop at Tinker AFB and are important to understanding groundwater and contaminant concerns at the Base consist of, in descending order: the Hennessey Group, the Garber Sandstone, and the Wellington Formation (Table 3-1). These bedrock units were deposited during the Permian age (230 to 280 million years ago) and are typical of redbed deposits formed during that period. The units are composed of a conformable sequence of sandstones, siltstones, and shales. Individual beds are lenticular and vary in thickness over short horizontal distances. Because lithologies are similar and because of a lack of fossils or key beds, the Garber Sandstone and the Wellington Formation

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Table 3-1

Major Geologic Units in the Vicinity of Tinker AFB (Modified from Wood and Burton, 1968)

(Page 1 of 2)

Water-Bearing Properties	Moderately permeable. Yields small to moderate quantities of water in valleys of larger streams. Water is very hard, but suitable for most uses, unless contaminated by industrial wastes or oil field brines.	Moderately permeable. Locally above the water table and not saturated. Where deposits have sufficient saturated thickness, they are capable of yielding moderate quantities of water to wells. Water is moderately hard to very hard, but less mineralized than water in other aquifers. Suitable for most uses unless contaminated by oil field brines.
Description and Distribution	Unconsolidated and interfingering lenses of sand, silt, clay, and gravel in the flood plains and channels of stream	Unconsolidated and interfingering lenses of sand, silt, gravel, and clay that occur at one or more levels above the flood plains of the principal streams.
Thickness (feet)	0-70	0-100
Stratigraphic Unit	Alluvium	Terrace deposits
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System	О⊃∢⊢шс	Z < C >

Table 3-1

(Page 2 of 2)

Water-Bearing Properties	Poorly permeable. Yields meager quantities or very hard, moderately to highly mineralized water to shallow domestic and stock wells. In places water contains large amounts of sulfate.	Poorly to moderately permeable. Important source of groundwater in Cleveland and Oklahoma counties. Yields small to moderate quantities of water to deep wells; heavily pumped for industrial	and municipal uses in the Norman and Midwest City areas. Water from shallow wells hard to very hard; water from deep wells moderately hard to soft. Lower part contains water too salty for domestic and most industrial uses.
Description and Distribution	Deep-red clay shale containing thin beds of red sandstone and white or greenish bands of sandy or limey shale. Forms relatively flat to gently rolling grass-covered prairie.	Deep-red clay to reddish-orange, massive and cross-bedded fine-grained sandstone interbedded and interlingered with red shale and siltstone	Deep-red to reddish-orange massive and cross-bedded fine-grained sandstone interbedded with red, purple, maroon, and gray shale. Base of formation not exposed in the area.
Thickness (feet)	200	500 <u>+</u>	- 000
Stratigraphic Unit	Hennessey Group (includes Kingman Siltstone and Fairmont Shale)	Garber Sandstone	Wellington Formation
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are difficult to distinguish and are often informally lumped together as the Garber-Wellington Formation. Together, these units are about 900 feet thick at Tinker AFB. The interconnected, lenticular nature of sandstones within the sequence forms complex pathways for groundwater movement.

The surficial geology of the north section of the Base is dominated by the Garber Sandstone, which outcrops across a broad area of Oklahoma County. Generally, the Garber outcrop is covered by a veneer of soil and/or alluvium up to 20 feet thick. To the south, the Garber Sandstone is overlain by outcropping strata of the Hennessey Group, including the Kingman Siltstone and the Fairmont Shale (Bingham and Moore, 1975). Drilling information obtained as a result of geotechnical investigations and monitoring well installation confirms the presence of these units.

Depositional Environment. The Permian-age strata presently exposed at the surface in central Oklahoma were deposited along a low-lying north-south oriented coastline. Land features included meandering to braided sediment-loaded streams that flowed generally westward from highlands to the east (ancestral Ozarks). Sand dunes were common, as were cut-off stream segments that rapidly evaporated. The climate was arid and vegetation sparse. Offshore the sea was shallow and deepened very gradually to the west. The shoreline's position varied over a wide range. Isolated evaporitic basins frequently formed as the shoreline shifted.

Across Oklahoma, this depositional environment resulted in an interfingering collage of fluviatile and windblown sands, clays, shallow marine shales, and evaporite deposits. The overloaded streams and evaporitic basins acted as sumps for heavy metals such as barium, chromium, iron, and lead. Oxidation of iron in the arid climate resulted in the reddish color of many of the sediments. Erosion and chemical breakdown of granitic rocks from the highlands results in extensive clay deposits. Evaporite minerals such as anhydrite (CaSO₄), barite (BaSO₄), and gypsum (CaSO₄•2H₂O) are common.

Around Tinker AFB, the Hennessey Group represents deposition in a tidal flat environment cut by shallow, narrow channels. The Hennessey Group comprises predominantly red shales, which contain thin beds of sandstone (less than 10 feet thick) and siltstone. In outcrop, "mudball" conglomerates, burrow surfaces, and desiccation cracks are recognized. These units outcrop over roughly the southern half of the Base, thickening to approximately 70 feet

in the southwest from their erosional edge (zero thickness) across the central part of Tinker AFB.

In contrast, the Garber Sandstone and Wellington Formation around Tinker AFB consist of an irregularly interbedded system of lenticular sandstones, siltstones, and shales deposited either in meandering streams in the upper reaches of a delta or in a braided stream environment. Outcrop units north of Tinker AFB exhibit many small to medium channels with cut and fill geometries consistent with a stream setting. Sandstones are typically cross-bedded. Individual beds range in thickness from a few inches to approximately 50 feet and appear massive, but thicker units are often formed from a series of "stacked" thinner beds. Geophysical and lithologic well logs indicate that from 65 to 75 percent of the Garber Sandstone and the Wellington Formation are composed of sandstone at Tinker AFB. The percentage of sandstone in the section decreases to the north, south, and west of the Base. These sandstones are typically fine to very fine grained, friable, and poorly cemented. However, where sandstone is cemented by red muds or by secondary carbonate or iron cements, local thin "hard" intervals exist along disconformities at the Base of sandstone beds. Shales are described as ranging from clayey to sandy, are generally discontinuous, and range in thickness from a few inches to about 40 feet.

Stratigraphic Correlation. Correlation of geologic units is difficult due to the discontinuous nature of the sandstone and shale beds. However, cross-sections (Figure 3-2) demonstrate that two stratigraphic intervals can be correlated over most of the Base in the conceptual model. These intervals are represented on geologic cross-sections A-A' and B-B' and in the Figures 3-3 and 3-4. Section A-A' is roughly a dip section and B-B' is approximately a strike section. The first correlatable interval is marked by the Base of the Hennessey Group and the first sandstone at the top of the Garber Sandstone. This interval is mappable over the southern half of Tinker AFB. The second interval consists of a shale zone within the Garber Sandstone, which, in places, comprises a single shale layer and in other places multiple shale layers. This interval is more continuous than other shale intervals and in cross sections appears mappable over a large part of the Base. It is extrapolated under the central portion of Tinker AFB where little well control exists.

Structure. Tinker AFB lies within a tectonically stable area; no major near-surface faults or fracture zones have been mapped near the Base. Most of the consolidated rock units of the

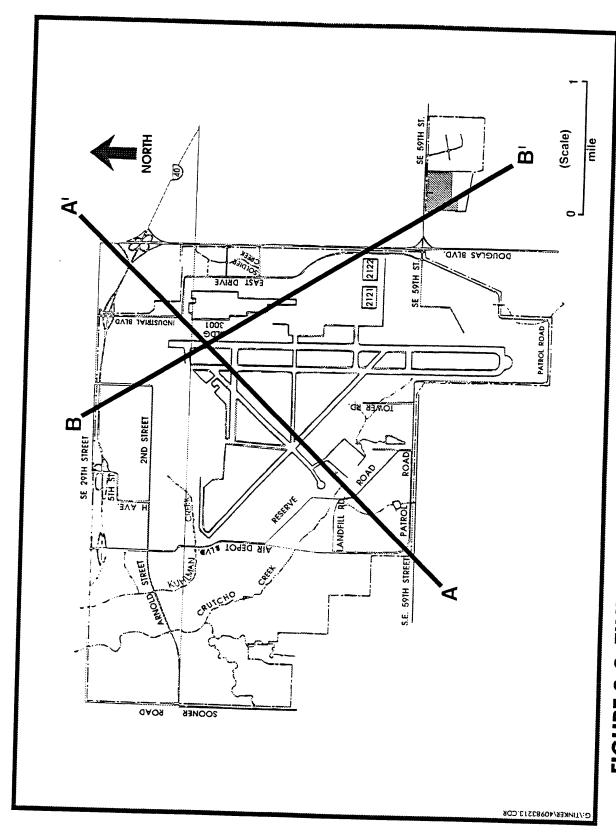


FIGURE 3-2 TINKER AFB GEOLOGIC CROSS SECTION LOCATION MAP

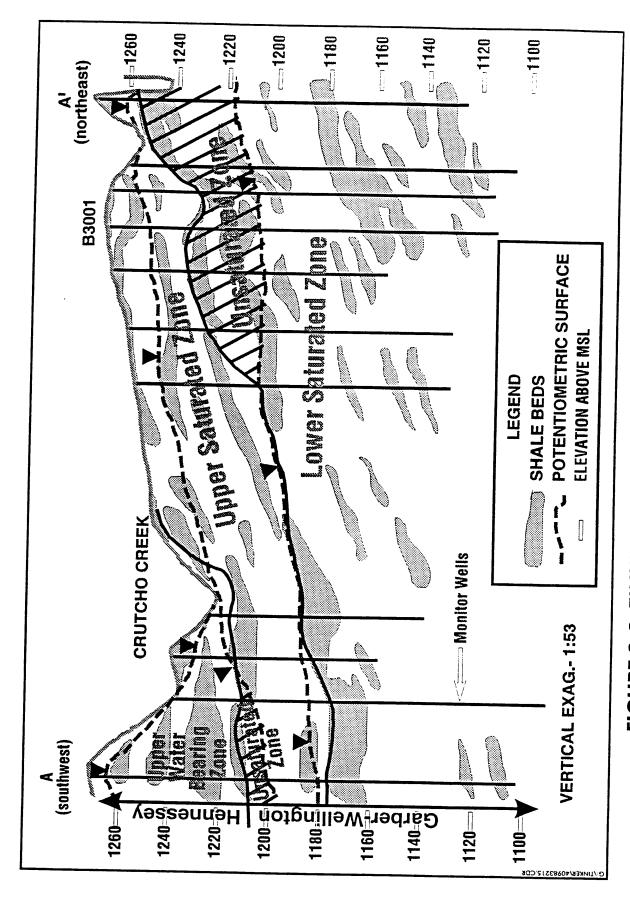


FIGURE 3-3 TINKER AFB GEOLOGIC CROSS SECTION A-A'

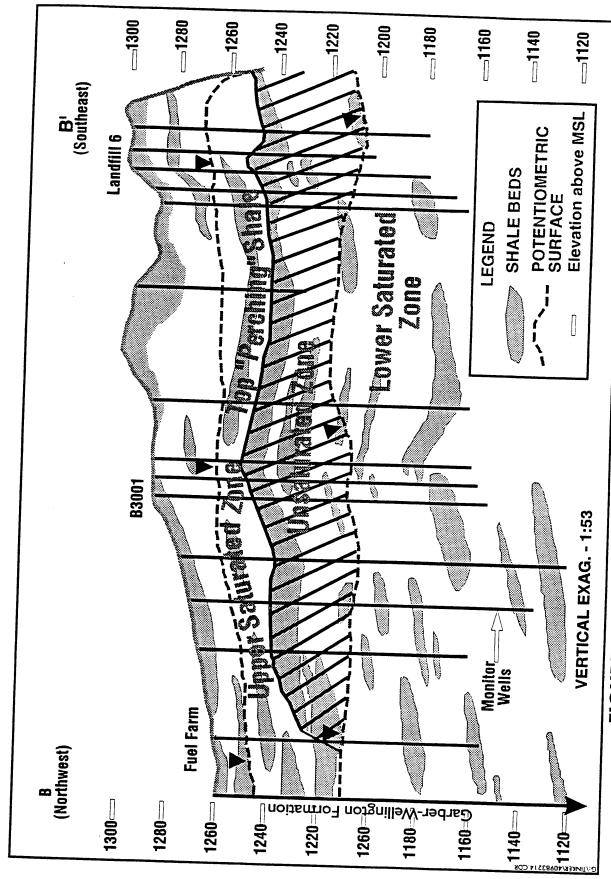


FIGURE 3-4 TINKER AFB GEOLOGIC CROSS SECTION B-B'

Oklahoma City area dip westward at a low angle. A regional dip of 0.0057 to 0.0076 ft/ft in a generally westward direction is supported by stratigraphic correlation on geologic cross sections at Tinker AFB. Bedrock units strike slightly west of north.

Although Tinker AFB lies in a tectonically stable area, regional dips are interrupted by buried structural features located west of the Base. A published east-to-west generalized geologic cross section, which includes Tinker AFB, supports the existence of a northwest-trending structural trough or syncline located near the western margin of the Base. The syncline is mapped adjacent to and just east of a faulted anticlinal structure located beneath the Oklahoma City Oil Field. The fault does not appear to offset Permian-age strata. There are indications that the syncline may act as a "sink" for some regional groundwater (southwest flow) at Tinker AFB before it continues to more distant discharge points.

3.2.2 Site Geology

OPSA is situated north of the Hennessey Group erosional edge, and lies within the outcrop area of the Garber-Wellington formation. Three soil borings were drilled to develop lithologic logs. Stratigraphic samples were taken continuously with a 5-foot tube sampler to a depth of 18.5 feet after encountering the water table at 13.7 and 15.9 feet below ground surface.

Each of the three 18.5-foot borings is characterized by clayey sand in the lower section, grading upward into sandy clay through the middle section, and fining to clay in the upper 3 feet. Boring SB-039 was also marked by 1 foot of gravel fill at the top of the boring as it was situated in a gravel driveway between Buildings 1005 and 1007.

Additional information on the site geology has been obtained from the SDB RFI. At the SDB, which is immediately adjacent to and east of the OPSA, ten soil borings were drilled and sampled, six monitoring wells installed, and 26 soil gas samples were taken.

Of the ten SDB borings, two borings (2-68A and 2-68B) can be used to describe some of the deeper geology in the vicinity of OPSA. Wells 2-68A and 2-68B, installed under the SDB, are located approximately 75 feet east of the OPSA. Though the subsurface stratigraphy at Tinker AFB is known to be laterally discontinuous over short horizontal distances, the lithologic logs for the shallow sections of wells 2-68A and 2-68B can be correlated with moderate variations in thickness to the shallow soil borings at the OPSA. The upper 20 feet of the well 2-68B boring is nearly identical to the shallow borings at OPSA, exhibiting a

fining upward sequence grading from clayey sand to silty, sandy clay to clay in the uppermost 5-foot section. Therefore, the general stratigraphic pattern observed in the deeper sections of the 2-68A and 2-68B logs can reasonably be projected under this OPSA.

In the 2-68A and 2-68B borings, a loose, sandy, gravelly clay unit extending from 20 to approximately 25-foot depth marks the base of the fining upward sequence. This gravelly unit presumably would have been encountered in the OPSA borings had they been extended another 5 feet. At 25 feet a sharp contact with hard, dense, clayey silt marks the base of the gravelly unit. Continuing down the section on the 2-68A well boring, the sediments, once again, become coarser grading from the clayey silt into a weakly laminated silty sand after approximately 28 feet.

From 35 feet down to the total depth of 70 feet, the geologic interpretation of the 2-68A well boring is based solely on the geophysical log as the remaining section was drilled via mud rotary techniques. The geophysical log suggests that the section consists of a series of three fining upward packages each marked by a sharp contact with the underlying sequence at its base. The clayey silt observed from 25 to 28 feet apparently is the top of the second fining upward, clastic sequence marked by a sharp basal contact with the clayey sediments capping the third sequence. The third sequence is bounded by a sharp contact with clayey sediments beginning close to 60 feet in depth which appear to coarsen with depth to the end of the log at 68 feet.

3.3 Hydrology

3.3.1 Regional/Tinker AFB Hydrology

The most important source of potable groundwater in the Oklahoma City metropolitan area is the Central Oklahoma aquifer system. This aquifer extends under much of central Oklahoma and includes water in the Garber Sandstone and Wellington Formation, the overlying alluvium and terrace deposits, and the underlying Chase, Council Grove, and Admire Groups. The Garber Sandstone and the Wellington Formation portion of the Central Oklahoma aquifer system is commonly referred to as the "Garber-Wellington aquifer" and is considered to be a single aquifer because these units were deposited under similar conditions and because many of the best producing wells are completed in this zone. On a regional scale, the aquifer is confined above by the less permeable Hennessey Group and below by the Late Pennsylvanian Vanoss Group.

Tinker AFB lies within the limits of the Garber-Wellington groundwater basin. Presently, Tinker AFB derives most of its water supply from this aquifer and supplements the supply by purchasing from the Oklahoma City Water Department. The nearby communities of Midwest City and Del City derive water supplies from both surface sources and wells tapping the aquifer. Industrial operations, individual homes, farm irrigation, and small communities not served by a municipal distribution system also depend on the Garber-Wellington aquifer. Communities presently depending upon surface supplies (such as Oklahoma City) also maintain a well system drilled into the Garber-Wellington aquifer as a standby source of water in the event of drought.

Recharge of the Garber-Wellington aquifer is accomplished principally by percolation of surface waters crossing the area of outcrop and by rainfall infiltration in this same area. Because most of Tinker AFB is located in an aquifer outcrop area, the Base is considered to be situated in a recharge zone.

According to Wood and Burton (1968) and Wickersham (1979), the quality of groundwater derived from the Garber-Wellington aquifer is generally good, although wide variations in the concentrations of some constituents are known to occur. Wells drilled to excessive depths may encounter a saline zone, generally greater than 900 feet below ground surface. Wells drilled to such depths or those accidentally encountering the saline zone are either grouted over the lowest screens or may be abandoned.

Tinker AFB presently obtains its water supplies from a distribution system comprised of 29 water wells constructed along the east and west Base boundaries purchased from the Oklahoma City Water Department. All Base wells are finished into the Garber-Wellington aquifer. Base wells range from 700 to 900 feet in finished depth, with yields ranging from 205 to 250 gallons per minute. The wells incorporate multiple screens, deriving water supplies from sand zones with a combined thickness from 103 to 184 feet (Wickersham, 1979).

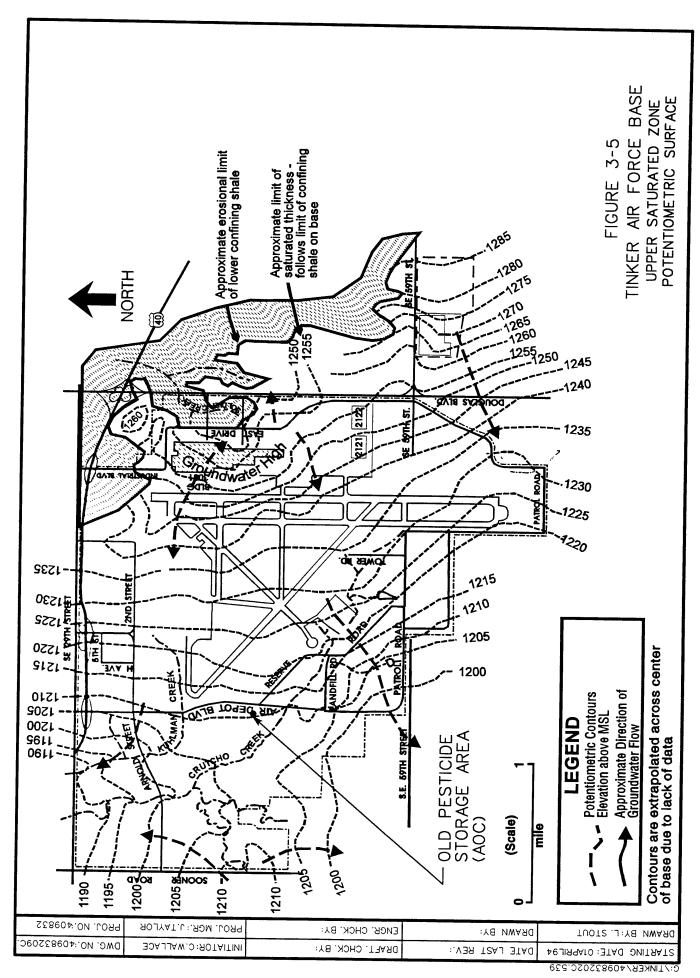
Conceptual Hydrologic Model. The hydrologic conceptual model of Tinker AFB involves a comprehensive review of available data, including those from direct measurement sources (borings, water level measurements, pump/slug tests, stream studies) as well as indirect sources (aerial photographs, topographic maps, published reports). The hydrologic system at Tinker AFB is complex, but the model provides both an approximation of depth to water and an estimated direction of groundwater movement and is therefore useful as a basis

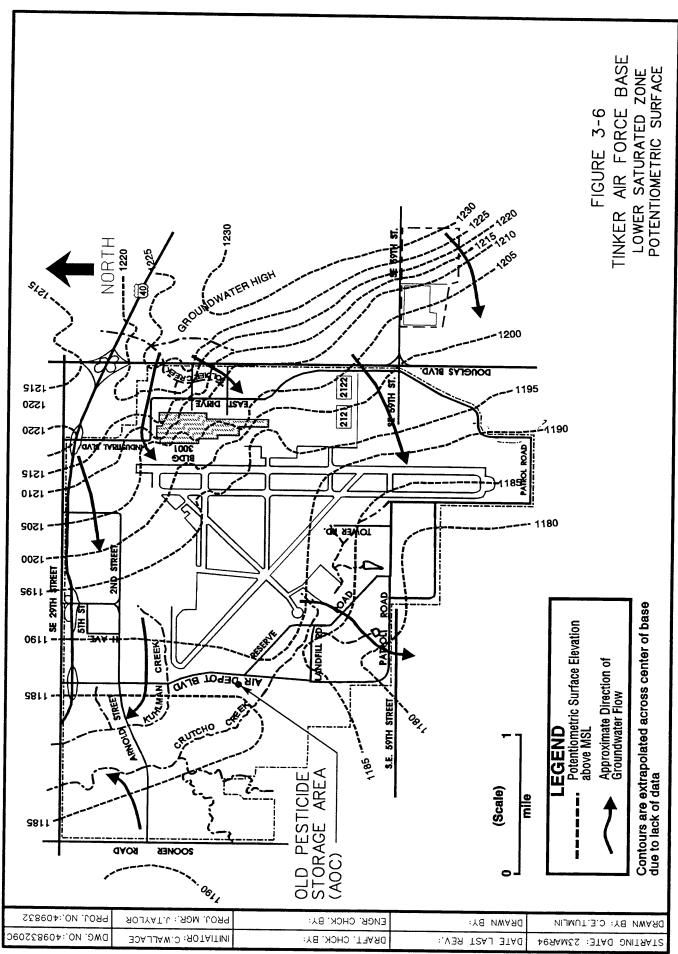
for designing field investigations. As information is derived from investigations, the model is continually updated and refined.

Groundwater. As a result of ongoing environmental investigations and the approximately 450 groundwater monitoring wells installed on the Base during various investigations, a better understanding of the specific hydrological framework has emerged. The current conceptual model developed by Tinker AFB (Tinker, 1993), based on the increased understanding of the hydrological framework, has been revised from a previous model adopted by the U.S. Army Corps of Engineers (USACE). Previous studies reported that groundwater was divided into four water bearing zones: the perched aquifer, the top of regional aquifer, the regional aquifer, and the producing zone. In the current model, two principal water table aquifer zones and a third less extensive zone have been identified. The third is limited to the southwest quadrant. The third aquifer zone consisted of saturated siltstone and thin sandstone beds in the Hennessey Shale and equates to the upper water bearing zone (UWBZ) described by the USACE at Landfills 1 through 4 (SWMUs-3 through -6). In addition, numerous shallow, thin saturated beds of siltstone and sandstone exist throughout the Base. These beds are of limited areal extent and are often perched.

In the current conceptual hydrologic model by Tinker AFB, an upper saturated zone (USZ) and a lower saturated zone (LSZ) are recognized in the interval from ground surface to approximately 200 feet. Below this depth is found the producing zone from which the Base draws much of its water supply. Figure 3-5 shows the potentiometric surface for the USZ and Figure 3-6 shows the potentiometric surface for the LSZ. The USZ exists under water table (unconfined) conditions, but may be partially confined locally. Conditions in the LSZ are difficult to determine due to screen placement and overlie long sand packs below the screen interval.

The USZ is found at a depth of 5 to 70 feet below ground surface and has a saturated thickness ranging from less than 1 foot at its eastern boundary to more than 20 feet in places west of Building 3001. The USZ is erosionally truncated by Soldier Creek along the northeastern margin of Tinker AFB (Figure 3-5). This aquifer zone is considered to be a perched aquifer over the eastern one-third of Tinker AFB, where it is separated from the LSZ by an underlying confining shale layer and a vadose zone. The confining interval extends across the entire Base, but the vadose zone exists over the eastern one-third of this area. The available hydrologic data indicate that the vadose zone does not exist west of a north-south line located approximately 500 to 1,000 feet west of the main runway; consequently, the USZ





is not perched west of this line. However, based on potentiometric head data from wells screened above and below the confining shale layer, the USZ remains a discrete aquifer zone distinct from the LSZ even over the western part of the Base. In areas where several shales interfinger to form the lower confining interval rather than a single shale bed, "gaps" may occur. In general, these gaps are not holes in the shale but are places where multiple shales exist that are separated by slightly more permeable strata. Hydrologic data from monitoring wells indicate that these zones allow increased downward flow of groundwater above what normally leaks through the confining layer.

The LSZ is hydraulically interconnected and can be considered one aquifer zone down to approximately 200 feet. This area includes what was referred to by the USACE as the top of regional and regional zones. Hydrologic data from wells screened at different depths at the same location within this zone, however, provide evidence that locally a significant vertical (downward) component of groundwater flow exists in conjunction with lateral flow. The magnitude of the vertical component is highly variable over the Base. Preliminary evidence suggests that the LSZ is hydraulically discrete from the producing zone. Due to variations in topography the top of the lower zone is found at depths ranging from 50 to 100 feet below ground surface under the eastern parts of the Base and as shallow as 30 feet to the west. Differences in potentiometric head values found at successive depths are due to a vertical (downward) component of groundwater flow in addition to lateral flow and the presence or absence of shale layers that locally confine the aquifer system. The LSZ extends east of the Base (east of Soldier Creek) beyond the limits of the USZ where it becomes the first groundwater zone encountered in off-Base wells. Because of the regional dip of bedding, groundwater gradient, and topography, the LSZ just east of the Base is generally encountered at depths of less than 20 feet.

Across the central portion of Tinker AFB, the unsaturated zone separating the USZ and LSZ disappears where the intervening shale layer dips below the surface of the LSZ (Figure 3-6). The disappearance of the unsaturated zone is supported by data from recently completed wells just west of the north-south runway and near Base Operations and by data from wells in the southwest portion of the Base. Measured water levels in two of the new wells show that the LSZ is confined at these locations by the shale separating the USZ and LSZ. No unsaturated interval is present.

To the southwest, measured water levels from wells screened in the Garber Sandstone at Landfills 2 and 4, SWMUs-4 and -6, which correspond in the conceptual model to the USZ

under the east part of the Base, show that the USZ remains unconfined or is partially confined. This zone is essentially the first water level encountered in the Garber Sandstone on the Base. Potentiometric data from wells in the southwest screened in deeper intervals, that correspond roughly to the LSZ to the east indicate that the LSZ is confined in this area. Data from wells screened at various intervals to a depth of about 90 feet in this area also show that no vadose (unsaturated) zone separates the USZ from the rest of the aquifer. The upper and lower zones cannot be distinguished in this area except by correlating geologic units across Base.

Farther to the southwest of the landfills, near the edge of the Base, another unsaturated zone is found separating groundwater in the Hennessey Group from the Garber-Wellington aquifer. This unsaturated zone is not continuous with that encountered on the east side of the Base. The groundwater in the overlying Hennessey water bearing zone represents the third groundwater zone of more limited areal extent mentioned previously. This shallow unconfined aquifer system is located on a topographic high (groundwater divide) in the strata of the Hennessey Group. Radial flow of groundwater off the divide toward nearby tributaries of Crutcho Creek is suggested from limited water level measurements. Additional shallow perched saturated zones of limited areal extent are thought to exist in other sandstone and siltstone beds within the Hennessey water bearing zone. Along the western margin of Tinker AFB west of Crutcho Creek, the shallow groundwater in the Hennessey water bearing zone and probably groundwater in the most shallow saturated zones in the Garber-Wellington aquifer appears to flow toward stream tributaries, and therefore, does not follow regional flow patterns to the west/southwest.

The aquifer zones in the conceptual model are hydraulically connected, although sometimes only to a very local extent, either directly as in the west part of the Base or indirectly through leakage and/or recharge patterns related to local streams. Because Tinker AFB is located in a recharge zone for the Central Oklahoma aquifer both horizontal and vertical (downward) components of groundwater flow exist. Measured potentiometric levels from well clusters with screens and filter packs placed at varying depths within the LSZ show that hydraulic heads decrease with depth and that the magnitude of the vertical component of flow varies with location. This finding is particularly important to recognize where data from these wells are being used to generate potentiometric contour maps.

Although the variability in the geology and the recharge system at Tinker AFB makes it difficult to predict local flow paths, Central Oklahoma aquifer system water table data taken

from the 1992 USGS Hydrologic Atlas show that regional groundwater flow under Tinker AFB varies from west/northwest to southwest depending on location. This finding is supported by contoured potentiometric data from Base monitoring wells, which show groundwater movement in the upper aquifer zones to generally follow regional dip. Measured normal to potentiometric contours, groundwater flow gradients range from 0.0019 to 0.0057 ft/ft. However, because flow in the near surface portions of the aquifer at Tinker AFB is strongly influenced by topography, local stream-based levels, complex subsurface geology and location in a recharge area, both direction and magnitude of groundwater movement is highly variable. The interaction of these factors not only influences regional flow, but also gives rise to complicated local, often transient, flow patterns at individual sites.

Several examples demonstrate this variability. Historical water level data around Crutcho Creek indicate that groundwater flow in that area is predominantly to the southwest. However, during high flow conditions bank recharge occurs and shallow local flow patterns near the creek may be reversed. This pattern is probably in effect at other streams as well. In the northeast quadrant of the Base, several factors contribute to groundwater "mounding" in the USZ and to formation of a groundwater high in the LSZ. This mounding leads to radial or semiradial groundwater flow at shallow depths. Finally, in the northeast part of the Base where sufficient data exist, comparison of potentiometric contours from successively deeper levels in the LSZ suggests that groundwater flow directions change with depth, gradually turning from west/southwest to northwest. This change in regional flow is attributed either to effects of pumping from deep water supply wells in the area and/or to the presence of the Deep Fork River located to the north. This river, along with the Canadian River south of Tinker AFB, has been demonstrated by the USGS to act as a major discharge point for regional groundwater in Central Oklahoma.

Surface Water. The interaction of surface water with groundwater is an important factor in predicting local groundwater flow patterns at Tinker AFB. Although no technical stream study data are presently available to determine what degree of interaction occurs between streams and groundwater, some qualitative observations provide clues to the importance of this system. The direction of stream flow on Tinker AFB appears to be controlled largely by a topographic divide that extends from southwest to northeast across the south part of the Base. Streams that originate on the north side of the divide flow to the north, including Soldier Creek, Crutcho Creek, and Kuhlman Creek. Elm Creek, which has its origin on the southeast side, flows to the south. Streams that flow northward become perennial before leaving the Base and, with no other constant source of water available, are considered to be

recharged by the aquifer (gaining streams). Some data indicate, however, that these streams become dry north of the Base during periods of lower precipitation and lose water to the aquifer (losing streams). Information from wells and piezometers near the ponded section of Soldier Creek at the industrial wastewater treatment plant also suggests that the pond contributes to the groundwater (a losing stream) in the LSZ at that location. Portions of Soldier Creek tributaries (near their headwaters, off-Base) flow only intermittently and probably recharge the aquifer through infiltration during periods of higher precipitation. Finally, where groundwater and stream elevations are the same, the observed direction of groundwater flow may be affected by transient factors such as bank storage from periods of increased precipitation.

Man-Made Structures. In the conceptual model of Tinker AFB, it is recognized that man-made features such as buried utilities (storm drains, waste lines) may further complicate the shallow groundwater situation. An additional problem encountered in generating the model involves improper monitoring well construction practices, which not only may contribute preferred pathways for groundwater (and contaminant) movement where wells have multiple screens or overlie long filter packs, but also often provide nonrepresentative, biased groundwater, and sample data.

The complex groundwater system at Tinker AFB makes correct placement and construction of monitoring and extraction wells critical. A good understanding of the conceptual hydrologic framework is essential to obtain representative data and to minimize errors. An integrated hydrologic conceptual model provides an overview of the groundwater system and leads in turn to more effective site project management.

3.3.2 Site Hydrology

The three soil borings drilled at the OPSA were advanced down to the top of the first water encountered. The depth to water in the borings as documented by the site geologist from boring logs ranged from 13.7 feet below ground surface to 15.9 feet below ground surface.

Comparing this groundwater data to the USZ potentiometric surface map developed for the SDB reveals correlation of the water level within 2 feet.

3.4 Soils

The surface soils of Tinker AFB have been studied by the U.S. Department of Agriculture (USDA), Soil Conservation Service (1969) and by several soil boring projects conducted for

geotechnical (foundation construction) investigations. Surface soils of the installation area are predominantly of two basic types: residual and alluvial. The three major soil associations (Table 3-2) mapped within installation limits are Darrell-Stephenville, Renfrow-Vernon-Bethany, and Dale-Canadian-Port. The residual soils associations, Darrell-Stephenville and Renfrow-Vernon-Bethany are the products of the weathering of underlying bedrock. The alluvial materials of the Dale-Canadian-Port association are stream-deposited silts and sands, which are typically restricted to floodplains of area streams.

Table 3-2

Tinker AFB Soil Associations (Source: USDA, 1969)

Association	Description	Thickness (in.)	Unified Classification ^a	Permeability (in./hr)
Darrell-Stephenville: loamy soils of wooded uplands	Sandy loam Sandy clay loam Soft sandstone (Garber Sandstone)	12-54	SM,ML,SC	2.0-6.30
Renfrow-Vernon-Bethany: loamy and clayey soils on prairie uplands	Silt loam - clay Clay loam Shale (Fairmont Shale)	12-60	ML,CL,MH,CH	<0.60-0.20
Dale-Canadian-Port: loamy soil on low benches near large streams	Fine sandy loam Silty clay loam Loam Clay loam	12-60	SM,ML,CL	0.05-6.30

^aUnified classifications defined in U.S. Bureau of Reclamation (USBR) 5005-86.

4.0 Description of Investigative Methods

The Phase I field investigation of the subsurface conditions at the OPSA was conducted from October through December 1993. All activities conducted during the field investigation program were performed in accordance with the Work Plan, the Data Management Plan, the Data Collection Quality Assurance Plan, the Health and Safety Plan, and their Amendments (IT, 1993a). As a Phase I investigation, field activities were designed to provide information on subsurface lithologies and the existence and nature of contamination, if any, in the soils beneath the OPSA. After evaluating soil conditions and determining the extent of RCRA requirements, recommendations are made in Chapter 9.0. When evidence of contamination is present, specific recommendations for a Phase II investigation are provided. If no contamination is found, close out is recommended. Field investigation activities described in the following sections included subsurface soil sampling of soil borings, and a soil gas survey (Table 4-1). A total of three soil borings were sampled to determine whether a release has occurred at the OPSA.

4.1 Soil Borings

Three soil borings, SB-039, SB-040, and SB-041, were drilled in the subsurface adjacent to Buildings 1005 and 1007 to determine whether a release had occurred at the OPSA (Figure 4-1). At the OPSA, each of the three borings were only advanced and sampled to the top of the perched water table (USZ) as this Phase I investigation focuses on impacts, if any, to soils. SB-039 was placed in the gravel driveway between Buildings 1005 and 1007, and SB-040 and SB-041 were located along the primary drainage pathways for storm water runoff from the paved area along the western walls of the buildings. Boring SB-039 was placed between the buildings in the area where the pesticides were loaded/unloaded and mixed. This boring would help detect any releases in the loading area. Borings SB-040 and SB-041 were placed on the west side of Buildings 1005 and 1007 since any releases of spills would drain to these areas.

The area to the north and east of Building 1005 is occupied by the wastewater treatment vessels that prohibit drilling rig access for completing borings on these sides of the building. Borings were not conducted inside the buildings due to accessibility problems.

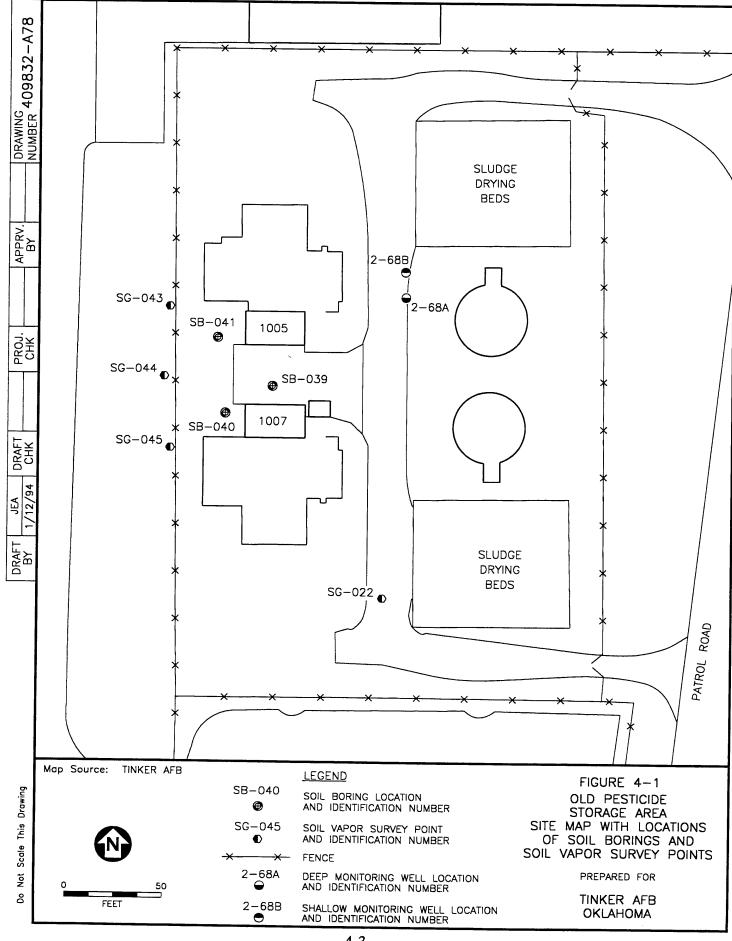
In addition to the three OPSA borings, well 2-66B, which was drilled to provide information on background soil conditions for the SDB RFI, will also be used for this OPSA report. Well

Summary of RFI Field Activities AOC, OPSA, Tinker AFB

Table 4-1

					Š	No. of Samples Collected for Chemical Analysis	Collected	or Chemik	al Anal	vsis					
			•												
ļ			Average	,					_		7.				
of Activity	Number of Locations	Footage of Borings/Wells	Footage per Boring/Well	Normal Samples	Duplicates	Rinsates	Field	Trip	S	QS.W	Lab	Totale	Analyses	Geotechnical	
											Cuanno	Lotals		Salitiples	
Soil borings	ო	55.5	18.5	£	0	-	0	2	2	2	4	24	VOCs,	-	7
									_				SVOCs,		
													Metals		
Soll Gas Survey	m	30	10.0	<u>ო</u>	n⁄a	n/a	n/a	n/a	n/a	n/a	n/a	က	Halogenated Volatile	n/a	
													Organics,		_
													B EX		_

*Geocechnical analysis included grain-size distribution, moisture content, cation exchange capacity, and vertical permeability.
VOCs - Volatile organic compounds - EPA Method 8240.
SVOCs - Semivolatile organic compounds - EPA Method 8270.
Metals - EPA Method 6010: Al, Ag, As (EPA Method 7060); Ba, Be, Cd, Cr, hexavalent Cr (EPA Method 7196); Cu, Fe, Pb (EPA Method 7421); Ni, Zn, and Hg (EPA Method 7471).
BTEX - EPA Method 8020 (modified).
Halogenated Volatile Organics - Method 8010 (modified).



2-66B was drilled immediately adjacent to and east of the OPSA. Well 2-66B is located approximately 300 feet east of the OPSA on the east side of the Air Depot Boulevard.

Each of the three borings was drilled with 8-inch hollow-stem augers to a total depth of 18.5 feet and water was encountered at approximately 16 feet in each boring. A 5-foot tube sampler was used to continuously sample the borings for lithologic logging purposes. Based on odor, field screening with a photoionization detector/flame ionization detector (PID/FID), and visual inspection, one soil sample was collected for analytical purposes from each 5-foot interval of the boring to the top of the water table where a final sample was collected. Under this sampling scheme a total of 13 normal samples were collected for chemical analysis from the three borings. The samples were analyzed for VOCs, semivolatile organic compound (SVOC), and priority pollutant metals. In addition to the samples collected for chemical analysis, one sample from SB-40 was submitted for geotechnical analysis, which included grain-size distribution, moisture content, cation exchange capacity, and vertical permeability. Upon reaching total depth, each boring was filled to the surface with grout consisting of Portland Type I cement mixed with no more than 10 gallons of water per 94-pound bag and 5 percent bentonite gel per volume.

4.2 Soil Gas Survey

A soil gas survey was performed consisting of three vapor gas survey points situated west of the OPSA (Figure 4-1). Soil gas data collected during the SDB investigation from survey points immediately east of Building 1005 were also evaluated as part of the OPSA investigation. For the survey 1-inch rods were hydraulically driven to a depth of 10 feet. A collection port at the bottom of the rods was then used to extract a soil gas sample for VOC analysis. The soil gas survey report is included as Appendix B to this report. The soil gas survey was used as a screening method based on the relatively shallow water table, approximately 16 feet. The information obtained was used to locate the soil boring to ensure correct placement.

4.3 Elevation and Location Surveying

After grouting, the elevations and locations of the soil borings at the OPSA were determined by a surveyor licensed by the State of Oklahoma. For each soil boring, the ground surface directly adjacent to the grouted hole was surveyed relative to base data provided by Tinker AFB. Elevations and locations of any pre-existing monitoring wells and piezometers at the OPSA were also determined. All locations are provided in the Base coordinate system and all elevations are given relative to msl. The surveyor's report is included as Appendix D to this report.

5.0 Investigation Results

The following sections provide an evaluation of the data quality and the results of the RFI performed at the OPSA. Section 5.1 reviews the procedures and methods used to ensure data quality and useability. Section 5.2 provides a discussion of the source characterization and the potential of the OPSA as a contributing source for contamination. Section 5.3 provides details regarding the contaminant characterization via the analysis of the analytical results from the soils investigation. The groundwater was not investigated at the OPSA and thus will not be discussed as a part of this RFI Report.

5.1 Data Quality Evaluation

The quality of the analytical data used for the RFI must be sufficient to support the associated risk management decisions. Data quality is ensured through adherence to Data Quality Objectives (DQO) and the sampling and analysis program outlined in the Data Collection Quality Assurance Plan (DCQAP) (IT, 1993b). The DCQAP identifies sampling locations, sampling methods, DQOs, field and laboratory quality control (QC) testing, analytical methods and reporting, and data evaluation and verification. The QC of field and laboratory activities; the assessment of precision, accuracy, and comparability of the data; and the verification of the data are the most significant activities designed to ensure compliance with the DQOs.

5.1.1 Field Quality Control

Field QC testing involved the collection of control samples to aid in evaluating inaccuracies which may be induced by field activities. These control samples include:

- **Field Blanks.** A field blank is an amount of water, gas, or solid that is provided to demonstrate the absence of contamination during sampling. Field blanks were only collected for groundwater and waste samples.
- *Trip Blanks.* Volatile organics samples are susceptible to contamination by diffusion of organic contaminants into the sample container. Therefore, trip blanks were analyzed to monitor for sample contamination during shipment and storage. No trip blanks were obtained for soil samples, due to the dissimilarity in matrix between the blanks and the actual samples.
- Rinsate Blanks. A rinsate blank is a volume of rinse solution (e.g., deionized distilled laboratory water or organic solvent) used to rinse a sampling tool which contacts more than one sample. The rinse solution was collected after the

- sampling tool was used and cleaned, to demonstrate that no residual contamination remained on the tool to carry over to the next sample.
- **Field Duplicates.** Duplicate analyses were performed to evaluate the precision of analysis. Both field and laboratory duplicates were taken and analyzed. Results of these analyses were used to determine the relative percent difference (RPD) between replicate samples.

5.1.2 Laboratory Quality Control

Laboratory QC testing involved the use of control samples to aid in evaluating QC errors, which may be induced by laboratory activities. The control samples include:

- Method Blanks. A method blank is a volume of deionized and distilled laboratory water for liquid samples, or a purified solid matrix for soil/sediment samples, carried through the entire analytical procedure to identify contaminants introduced during the procedure.
- **Bottle Blanks.** At a frequency of 1 percent or greater, laboratory-prepared sample containers were tested to verify that the container cleaning procedure is performed acceptable. Parameters of concern for the particular container were tested (e.g., metals for plastic containers).
- Laboratory Blanks. Distilled water-filled volatile organic analysis (VOA) vials were stored in the laboratory using the same method of storage used for field samples. If the field and trip blanks contained high concentrations of contaminants, the laboratory blank was analyzed to identify the source of contamination.
- **Matrix Spikes.** To evaluate the effect of sample matrix on analytical methodology accuracy, a separate sample aliquot was spiked with the analyte of interest and analyzed with approximately ten samples or, if a smaller number of samples are associated with a test series, for each group of samples.
- **Surrogate Standards.** Surrogate standards are compounds added to gas chromatography/mass spectrometry (GC/MS) standards, blanks, and samples prior to extraction or purging to monitor the recovery efficiencies of the sample preparation and analytical procedures on a sample-by-sample basis.

5.1.3 Evaluation of Precision and Accuracy

As part of the analytical QC testing program, QC sample results were used to apply precision and accuracy criteria for each parameter that was analyzed. When the analysis of a sample set was completed, the QC data generated were evaluated based on the following criteria:

• **Method Blank Evaluation.** The method blank results were evaluated for high readings characteristic of background contamination. If high blank values were

- observed, laboratory glassware and reagents were checked for contamination and the analysis of future samples halted until the system could be evaluated.
- Trip, Field, Laboratory, and Rinsate Blank Evaluation. Trip, field, laboratory, and rinsate blank results were evaluated for high readings similar to the method blanks described above. If high blank readings were encountered, the procedure for sample collection, shipment, and laboratory analysis would be reviewed.
- **Duplicate Sample Evaluation.** Duplicate sample analysis was used to determine the precision of the analytical method for the sample matrix. The duplicate results will be used to calculate the precision as defined by the RPD.
- **Matrix Spike Evaluation.** The observed recovery of the spike versus the theoretical spike recovery was used to calculate accuracy as defined by the percent recovery (%R).
- Surrogate Standard Evaluation. The results of surrogate standard determinations were compared with the true values spiked into the sample matrix prior to purging or extraction and analysis, and the percent recoveries of the surrogate standards were determined.
- Comparability Between Data Sets. Comparability is a qualitative parameter
 expressing the confidence with which one data set can be compared with another.
 Comparability for sampling and analysis was achieved by specifying and using only
 well-recognized techniques and accepted standard EPA methods and procedures for
 sampling and analysis reporting of representative samples.

5.1.4 Data Verification

Data packages and parameters were evaluated against the following criteria to ensure data validity prior to use:

- Sampling documentation (e.g., sample collection log, Chain-of-Custody Form, and Request for Analysis Form) matches samples submitted to samples analyzed.
- Chain-of-Custody Forms are complete.
- Sample identification summary for each sample is present.
- Analytical results for each sample include correct units, detection limits, method used, date sampled, date extracted, date analyzed, dilutions noted.
- Holding times were met.
- Data on field and laboratory duplicate samples for RPDs were within QC limits.

- Matrix spike/matrix spike duplicate (MS/MSD) recoveries were within QC limits.
- Method blanks were within control limits.

5.1.5 Data Useability

The data verification did not identify any reoccurring problems with analytical procedures or analytical reporting. Precision and accuracy for each analytical method as demonstrated by the evaluation or surrogate recoveries, laboratory control samples, MS, and MSD recoveries were satisfactory. The sample identification summaries for all samples and methods were present and complete. No data were found to be invalid. All deficiencies encountered were minor and did not affect the overall quality of the data, since other DQOs were met. Deficiencies were generally the result of matrix interference.

The analytical data generated from the RFI are of sufficient quality to make evaluations and support recommendations.

5.2 Source Characterization Results

The OPSA is located at Building 1005, which is on the west side of the Base, just west of Air Depot Boulevard. Building 1005 was constructed as part of a sanitary waste treatment plant which was operational from the early 1950s until 1971. The building reportedly was used to store and mix pesticides, however, the exact dates of these operations are not known. The sanitary waste treatment plant also includes AOC, SDB, which is concerned with eight sludge drying beds that were recently used as a 90-day storage site for hazardous waste drum accumulation. The SDB is simultaneously being investigated under this RFI (Volume II).

A source characterization investigation was not conducted or required at this site because the practice of storing and mixing pesticides has stopped. Therefore, there are no source materials at the OPSA site.

5.3 Contaminant Characterization Results

5.3.1 Establishment of Surficial Soil Background Concentrations

Background soil concentrations for trace metals were determined based on a study performed by the (USGS, 1991). The study area was confined to approximately four counties in central Oklahoma. Tinker AFB lies at the approximate center of this area. A total of 293 B-horizon soil samples were collected throughout this area. Soil samples were collected at the top of

the B-horizon, which was usually 20 to 30 centimeters below the surface but ranged from 3 to 50 centimeters below the surface. For site-specific analytes for which the USGS offered no background value, a site-specific background value was selected for comparison. This site-specific background sampling location was typically from an upgradient monitoring well boring.

The use of B-horizon soil as selected by the USGS for metals background concentrations in soil is conservative in that the soil sampled does not reflect all possible anthropogenic influences. Most of the samples were obtained from hill crests and well drained areas in pasture and forested land, well away from roadways to minimize contamination from vehicular emissions (i.e., nearly "pristine" areas). Trace metal inputs to the study site soils on Base, however, will come from anthropogenic sources outside of the study area, in addition to those sources related to disposal activities or operations within the confines of the study site. Responsibility may, therefore, be taken for more trace metal impacts than are actually attributable to a given site.

An additional level of conservatism was added in the manner in which the site-specific metals concentrations were compared to the background levels. Typically, the environmental concentrations of trace metals at study sites are represented by the arithmetic upper 95th confidence interval on the mean of a normal distribution. This upper 95th confidence interval value is then compared to the background values. The intent of this typical approach is to estimate a reasonable maximum exposure (RME) case (i.e., well above the average case) that is still within the range of possible exposures.

To expedite this comparison and establish greater conservatism, the maximum concentration found at the site of concern, rather than the upper 95th confidence interval value, was compared to the USGS background values. If the environmental concentration of a particular analyte was below or within the minimum-maximum range of the USGS background concentrations, that analyte was considered to be naturally occurring and of no further concern to this investigation. Given the conservative approach of the comparisons, site-specific metals concentrations would have to significantly exceed the USGS background levels and be attributable to operations at the site before they would be considered a constituent of concern.

The numerical comparison of site-specific metals concentrations to the USGS background concentrations is presented in the following section.

5.3.2 Soil Characterization

During the RFI performed at the OPSA, a total of 13 soil samples were collected from the three soil borings for chemical analysis. The VOCs, SVOCs, and metals (aluminum, arsenic, barium, beryllium, cadmium, chromium, chromium VI, copper, lead, mercury, nickel, silver, and zinc). The samples were retained for analysis based on field screening techniques. The results for detected analities are presented in Table 5-1. The results of the highest detected anality, for metals, are compared to the USGS background data, which is summarized in Table 5-2. All metal comparisons were less than the maximum value presented by USGS except for chromium VI and mercury. These two metals were not reported by USGS, so they were compared to the maximum values of the background samples collected for the RFI performed at the SDB.

Chromium VI and mercury were not detected in the SDB background samples. The chromium VI value was at the midpoint of the detection range. Mercury was detected at a concentration of 0.027 milligrams per kilogram (mg/kg), just above its detection unit of 0.023 mg/kg.

Acetone was the only organic anality detected, but it was also found in the sample blank. Given the low values of detected acetone in the samples, it is assumed that the detects are laboratory related and should not be addressed as a concern from the operations of storing and mixing pesticides at OPSA. Appendix C provides a summary of all the results along with Certificate of Analysis and sample Chain-of-Custodies.

Due to the lack of elevated levels of chromium VI and mercury in the uppermost soils, it does not appear that the levels of chromium VI and mercury are a result of past operations at the OPSA. The uppermost soils are most likely composed of non-native fill material brought to the OPSA area during construction. The detected metals are most likely part of that fill material and their presence is independent of the operation of the OPSA. A soil boring summary is provided as Table 5-3.

A soil gas survey consisting of three vapor gas survey points situated west of the OPSA was also performed at the site (Figure 4-1). Soil gas data collected during the SDB investigation from survey points immediately east of Buildings 1005 were also evaluated as part of the OPSA investigation. During the survey 1-inch-diameter rods (with bottom collection parts) were hydraulically driven to a depth of 10 feet and the collection port at the bottom of the rods was then used to extract a soil gas sample for VOA. Figure 5-1 presents the three soil

Analytical Results for Old Pesticide Storage Area for Soil Tinker Air Force Base, Oklahoma Table 5-1

Well	Well/Boring.	SB_030	CD 030	-					
		CO-00	CO-de	SP-036	SB-039	SB-040	SB - 040	CR-040	070 03
San	Sample ID:	A1046	A1047	7 A1048	A1040	A 1050	A 1051	0.00	0+0-95
Depth	Depth in Feet:	2-2.5	7-75		15 16 6	0000	1017	A1052	A1053
Parameters		1		11:0		C.Z - Z	7 - 7.5	10.5 - 11	15 - 16
		Kesuit QFR	Result	OFR Result OFR	Result	OFR Result OFP	Decult OED	Don't OTD	:
Metals (mg/kg)						1	W.J. Jimeau	nesult OFK	Kesuit QFK
Aluminum		13000 N	10000	•	2	0000			
Arsenic - Granhite Firmace			000	3	z	N 000CI	8200 N	2	9100 N
D		Z 7	3.2 N	Z 9.1	3.3 N	2.3 N	7	2	7
Barium		400 N	760		2	220 M			
Beryllium				2	5	N 007	280 N	150 N	Z 29/2
		4.7	£.1	1.2		1.8	1.9	7.	7 4
Cadmium		_	1.3			000		3 ;	0.1
Chromium		;	;			0.30	0.94	0.79	0.45
		71	14	11	13	14	10	11	
Chromium VI		0.11	0.26			,	2	77	CI .
Conner	_	,	; ;						
· · · · · · · · · · · · · · · · · · ·		č.	8.9	9	7.9	7.8	11	œ	•
Iron		16000 N	12000 N	N 0008	12000 N	10000			×
Lead - Graphite Furnace		7		2000	1700071	17000 N	12000 N	9400 N	11000 N
			0.1	Z 9.4 Z 9.4	Z 5.8	0.2 N	N 70	N yr	2
Mercury		0.027							Z 5.0
Nickel		7	,	•					
Cilion		G.	07	5.2	11	=	28	12	- 21
ouvel 2:		0.5	0.11	0.023	0.26	0.079	0 40	86.0	77
Zinc		28	18	9	,		000	0.70	0.32
Volatiles (119/kg)	-) •	2	CI	CI.	77	18	19	16
Acetone		120 B	130 B	3 13 JB	0 4 TR	a1 0	5		
						UC 7.7	27		

Analytical Results for Old Pesticide Storage Area for Soil Tinker Air Force Base, Oklahoma Table 5-1

	Well,	Well/Boring:	SB 040	SE CREO	SB - 041	SB-041	SR-041	Г
	San	Sample ID:	A1054	A1058	A1059	A1060	A1061	
		Depth in Feet:	15 - 16	2.2.5	7 - 7.5	12.5 - 13.5	16 - 16.5	
	Parameters		Result OFR	OFR Result OFR	OFR Result OFR	OFR Result OFR	OFR Result OFR	
	Metals (mg/kg)							Т
	Aluminum		8300 N	13000 N	8400 N	Z 0085	N 0020	_
	Arsenic - Graphite Furnace			3.1	2.4	12	3.0	
	Barium		530 N	210 N	210 N	330	030 N	
	Beryllium		1.6	0.92	0.86	. SC) 83 0 83	
	Cadmium		0.1	0.57	<u> </u>	85.0	6.60	_
	Chromium		12	12	2) oc) 1	
	Chromium VI			ļ	:	9	07	
	Copper		8.4	8.2 N	Z 8.Z	2	20	_
	Iron		N 00001	12000 N		N 0059	Y. C.	
	Lead - Graphite Furnace			: 2		2000 N		
	Mercury					N 1.0	Z 2	
	Nickel		13	10	15	80	13	
-8	Silver		0.14	0.57	0.41	0.33	290	
	Zinc		15	21	17			
	Volatiles (ug/kg)				•	3	91	
	Acetone		8.8 JB	10 JB		9.6 JB	11 RI	
	B = Analyte was also found in sample blank	lank					- 1	1
	E = Concentration exceeds instrument calibration range for that specific analysis	alibration	range for that specif	ic analysis				
	J = Concentration is an estimated value							
	N = Sample is outside of Matrix Spike QC Limit	CLimit						_
	< = Not detected							
	QFR = Qualifier							
	Analytical data has not been validated							

Table 5-2
Soil Metals Background Comparison
AOC, OPSA, Tinker AFB

	Site	USGS Background	Concentration
Analyte	Maximum Value (ppm)	Detection Limit (ppm)	Range (ppm)
Aluminum	15,000	50	3800-89,000
Arsenic	11	0.1	0.6-21
Barium	930	1	47-6400
Beryllium	2.4	1	<1-3
Cadmium	1.5	2	<2
Chromium	16	1	5-110
Chromium-VI	0.26	0.1 ^a	<0.1-<0.5 ^a
Copper	11	1	<1-59
Iron	16,000	50	1,800-58,000
Lead	27	4	<4-27
Mercury	0.027	0.023	<0.023-<.024 ^a
Nickel	28	2	<2-61
Silver	0.69	2	<2
Zinc	21	2	3-79

^aSite-specific background value. USGS value not available.

Table 5-3

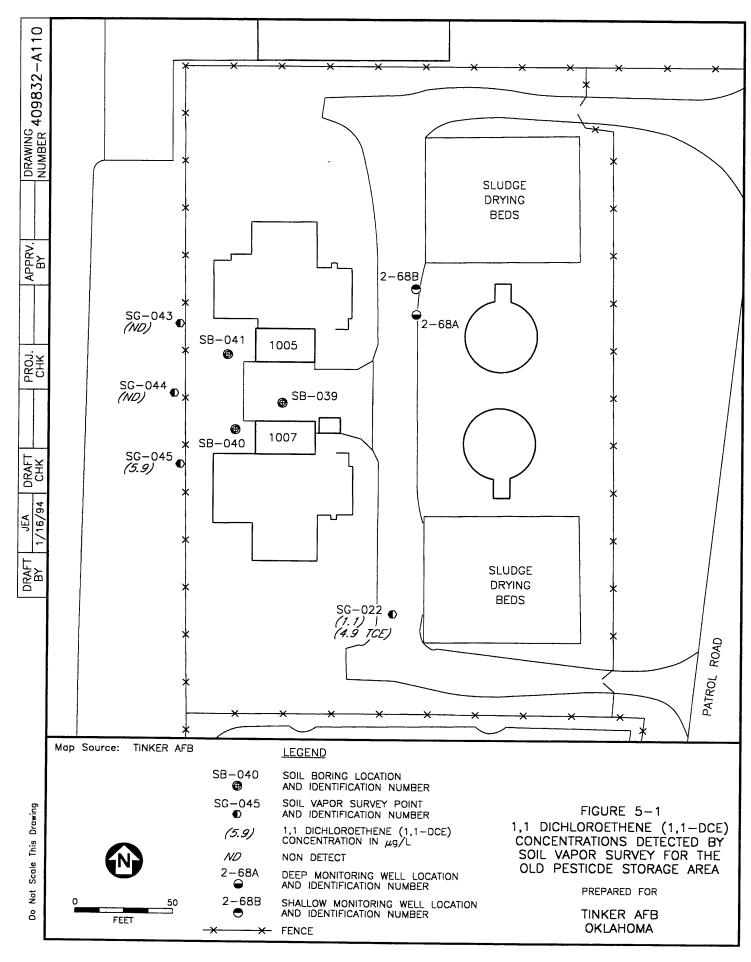
RFI Soil Borings Summary AOC, OPSA, Tinker AFB

		Boring C	oordinates	Surface	Total Depth	Soil Samples ^a
Boring ID	Date Completed	Northing	Easting	Elevation (msl)	Drilled (fbgs)	Collected for Analysis
SB-039	10/25/93	153410.174	2177198.420	1225.186	18.5	4
SB-040	10/25/93	153395.948	2177174.077	1225.367	18.5	6
SB-041	10/26/93	153435.613	2177169.986	1226.184	18.5	4
Totals					55.5	14

^aNumber of soil samples collected includes field duplicates and geotechnical samples.

msl - mean sea level

fbgs - feet below ground surface



gas vapor survey locations at the OPSA and the locations at the SDB and the compounds detected during the soil gas survey. 1,1-Dichloroethene (DCE) was detected at 5.9 micrograms per liter (μ g/L) in SG-045, and was the only compound detected during the soil gas survey. 1,1-DCE and tetrachloroethene (TCE) were detected at 1.1 μ g/L and 4.9 μ g/L, respectively in SG-022 during the soil gas survey at the SDB. The analytical results from the soil vapor survey are qualitative only and do not have a direct correlation with VOC-impacted soil. Quantitative data on the extent of VOC-impacted soil was obtained by direct sampling of the media.

Figure 5-2 indicates the location of cross-section C-C'. Figure 5-3 provides the subsurface cross section for the C-C' traverse. Three soil borings were completed for lithologic logging and analytical sampling purposes under the RFI conducted at the OPSA. To obtain complete stratigraphic logs, borings were sampled continuously with a 5-foot tube sampler. Each boring at OPSA was completed to a depth of 18.5 feet after encountering the water table at approximately 16 feet. Figure 4-1 shows the boring locations at the OPSA. Additional information on the site geology was obtained from the RFI conducted at the SDB, which is immediately adjacent to and east of the OPSA where ten soil borings were drilled and six monitoring wells were installed.

During the installation of soil boring SB-040 a soil sample was collected for geotechnical analysis to determine vadose zone properties. A Shelby tube was used to collect a soil core from the boring. The sample was submitted for geotechnical analysis of the following parameters: grain-size distribution, moisture content, cation exchange capacity (CEC), and vertical permeability. Certificates of analysis are provided as Appendix E. The analytical results are summarized as follows:

Sample Number

Sample Location

Soil Boring SB-040

Sample Depth (feet)

Vertical Permeability (cm/sec)

Moisture Content (percent)

CEC (MEQ/100 grams)

Particle Size Distribution

J5420

Soil Boring SB-040

-11.5 to -12.5

4.7 x 10⁻⁹

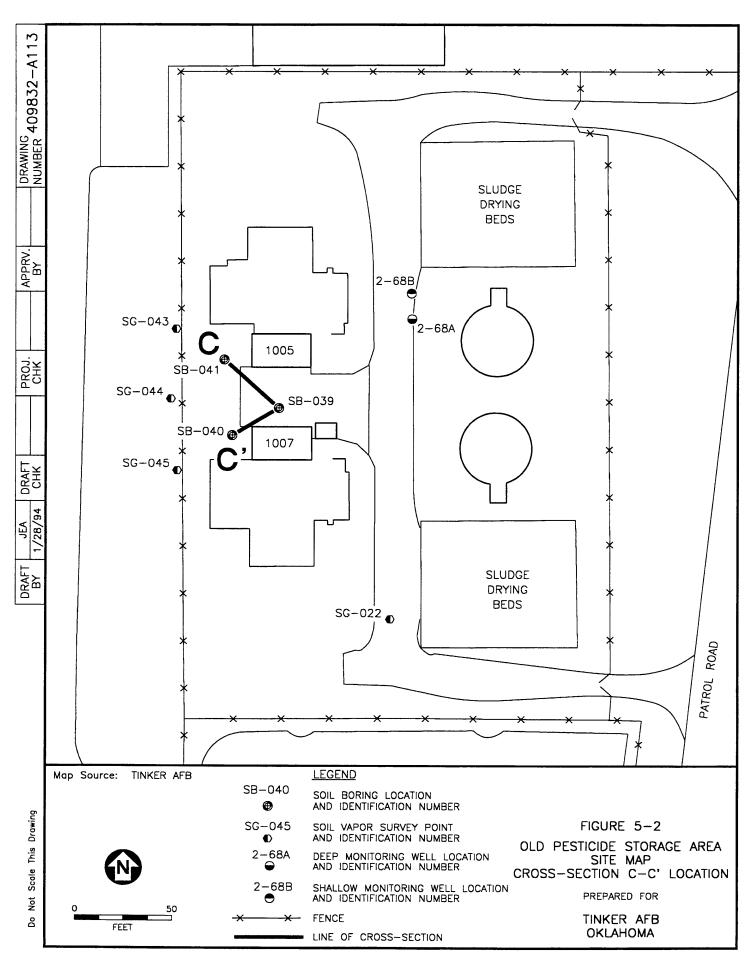
17.9

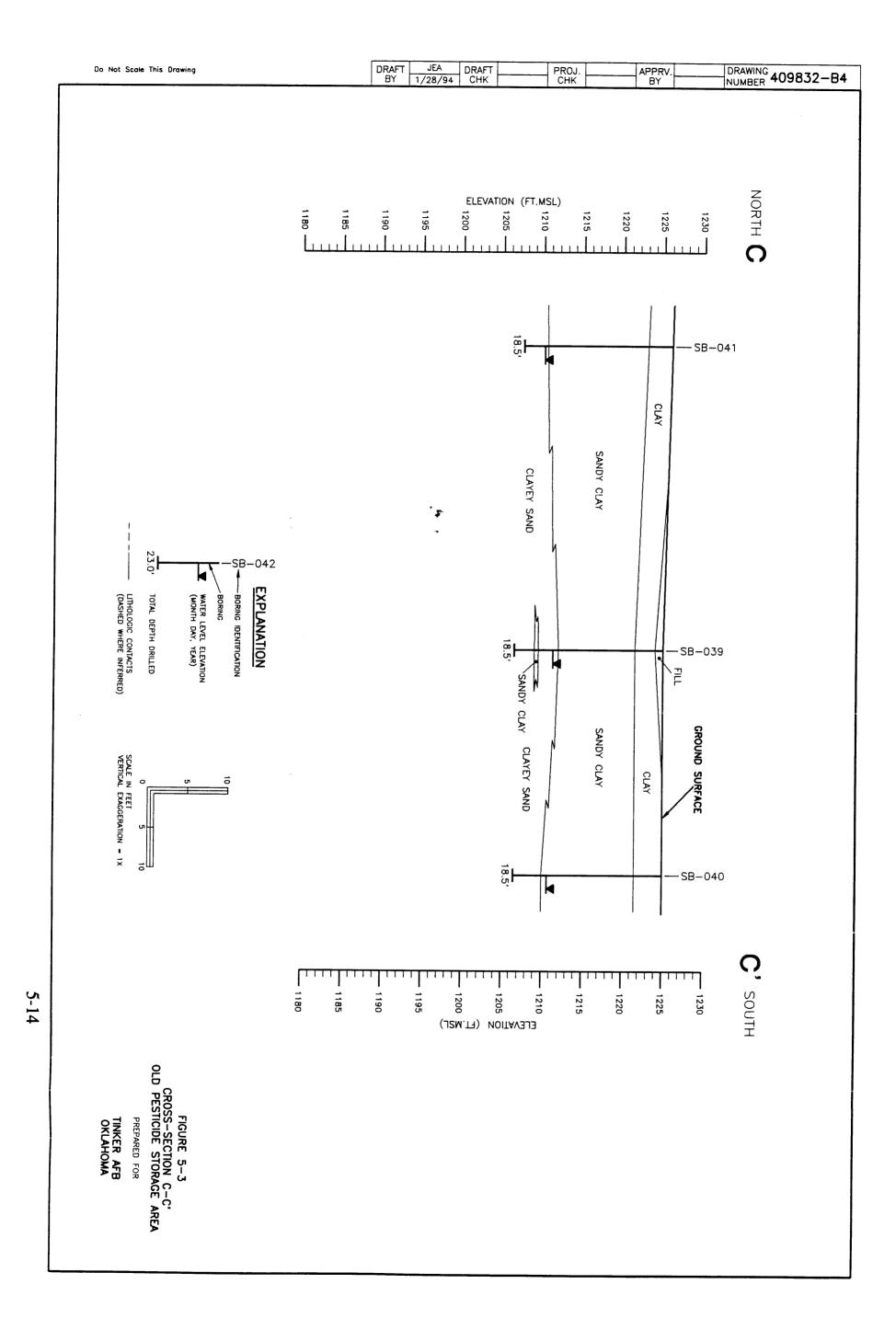
17.96

See Appendix F graph

5.3.3 Groundwater Characterization

During the RFI at the OPSA no groundwater samples were collected, therefore no information regarding groundwater quality is available from this investigation. The three soil borings





drilled at the OPSA were advanced down to the top of the first water encountered. The depth to water in the borings as documented by the site geologist from boring logs ranged from 13.7 feet below ground surface to 15.9 feet below ground surface.

6.0 Potential Receptors

A specific potential human and ecological receptor search has not been performed for the OPSA. Data are available in the form of chemical analysis of soils and soil gas and current uses of this site and media, and can be used to initiate a potential receptors search. The following narrative outlines the data available to begin identification of potential receptors.

6.1 Human Receptors

Tinker AFB is situated on a relatively flat expanse of grassland. Prior to the development of the Base, the area was characterized by large tracts of agricultural land. The Base currently occupies approximately 5,000 acres of semi-improved and unimproved grounds that are used for the airfield, golf course, housing area, offices, shops, and other uses characteristic of military installations.

The Garber-Wellington aquifer, which underlies Tinker AFB, is the single most important source of potable groundwater in the Oklahoma City area. The recharge area for the Garber-Wellington aquifer covers the eastern half of Oklahoma County, including Tinker AFB. Approximately 75 percent of the Base's water supply is obtained from production wells pumping from this aquifer. Industrial operations, individual homes, farm irrigation, and small communities not served by municipal distribution systems also depend on the Garber-Wellington aquifer. Communities, such as Oklahoma City, presently depending upon surface water supplies also maintain a well system drilled into this aquifer as a standby source of water in the event of drought. Lake Stanley Draper, a local surface water supply reservoir with a small portion of its drainage basin within the boundaries of Tinker AFB, serves a significant recreational function as well.

In 1989, approximately 26,000 military and civilian personnel worked at Tinker AFB. Of these, approximately 2,722 personnel occupied on-Base housing, which consisted of 530 family housing units and seven dormitories. At that time, 1,262 of these residents were children. Military personnel and their families who reside on Base represent the nearest receptors to releases from Tinker AFB.

The OPSA site is currently fenced and access to the area is restricted. In addition, no site personnel currently work in the area of the OPSA. Water well No. 6, the only well in the vicinity of OPSA, is no longer in use and has been plugged.

The current land use at and near the Base is not expected to change because the facilities have decades of useful life remaining and the Base has an important and continuing mission. However, other future land use scenarios and any human receptors associated with those scenarios may need to be considered.

6.2 Ecological Receptors

Tinker AFB lies within a grassland ecosystem, which is typically composed of grasses, forbes, and riparian (i.e., trees, shrubs, and vines associated with water courses) vegetation. This ecosystem has generally experienced fragmentation and disturbances as result of urbanization and industrialization at and near the Base. While no threatened or endangered plant species occur on the Base, the Oklahoma penstemon (*Penstemon oklahomensis*), identified as a rare plant under the Oklahoma Natural Heritage Inventory Program, thrives in several locations on Base. Tinker AFB policy considers rare species as if they were threatened or endangered and provides the same level of protection for these species.

In general, wildlife on the Base is typically tolerant of human activities and urban environments. No federal threatened or endangered species have been reported at the Base. However, one specie found on the Base, the Texas horned lizard (*Phrynosoma cornutum*), is a Federal Category 2 candidate specie and under review for consideration to be listed as threatened or endangered. Air Force policy (AFR 126-1) considers candidate species as threatened or endangered and provides the same level of protection.

The Oklahoma Department of Wildlife Conservation also lists several species within the state as Species of Special Concern. Information on these species suggests declining populations but information is inadequate to support listing, and additional monitoring of populations is needed to determine the species status. These species also receive protection by Tinker AFB as threatened or endangered species. Of these species, the Swainson's hawk (Buteo swainsoni) and the burrowing owl (Athene cunicularia) have been sighted on Tinker AFB. The Swainson hawk, a summer visitor and prairie/meadow inhabitant has been encountered Basewide. The burrowing owl has been known to inhabit the Air Field at the Base.

7.0 Action Levels

An "action level" is defined by EPA in proposed rule 40 CFR 264.521 (55 FR 30798; 7/27/90), "Corrective Action for Solid Waste Management Units (SWMU) at Hazardous Waste Management Facilities," as a health- and environment-based level, determined by EPA to be an indicator for protection of human health and the environment. In the preamble to this proposed rule, the focus of the RFI phase is defined as "characterizing the actual environmental problems at the facilities." As part of this characterization, a comparison of the contaminant concentrations to certain action levels should be made to determine if a significant release of hazardous constituents has occurred. This comparison is then used to determine if further action or corrective measures are required for a SWMU or an AOC. The preamble to the proposed rule states that the concept of action levels was introduced because of the need for "a trigger that will indicate the need for a Corrective Measures Study (CMS) and below which a CMS would not ordinarily be required" (55 FR 30798; 7/27/90). If constituent concentrations exceed certain action levels at a SWMU or an AOC, further action or a CMS may be warranted; if constituent concentrations are below action levels, a finding of no further action may be warranted. This chapter of the report presents the initial analytical data as compared to certain potential action levels.

Action levels are concentrations of contaminants at or below which exposure to humans or the environment should not produce acute or chronic effects.

The action level information is presented in this chapter so that a constituent concentration at a sample location can be compared with its potential action level. Only constituents identified in the analysis are listed in the AOC, OPSA table. Table 7-1 shows the action levels for soil, as published in federal or state regulations, policies, guidance documents, or proposed rules.

The action levels listed in Table 7-1 are:

• SWMU Corrective Action Levels (CAL) - The first set of action levels provided in the table are those taken from the proposed rule (40 CFR 264.521) and provided as Appendix A to the rule as "Examples of Concentrations Meeting Criteria for Action Levels." These levels are health-risk based and are provided as specific examples of levels below which corrective action would not be required.

Action Levels

AOC, OPSA, Tinker AFB

Table 7-1

	SWMU CAL ^a	USGS ^b Background	SB-039	SB-040	SB-041
Parameters	Soil (mg/kg)	Soil (mgkg)	Range (mg/kg)	Range (mg/kg)	Range (mg/kg)
Organics					<u>*</u>
Acetone	8000		0.0094-0.130		
Inorganics					!
Aluminum		89,000	7400-13000	8300-15000	5800-13000
Arsenic	80	21	1.8-3.3	1.6-11	1.2-3.9
Barium	4000	6400	390-760	150-760	210-930
Beryllium	0.2	3	1.2-2.4	1.5-1.9	0.50-0.92
Cadmium	40	<2	0.26-1.3	0.10-0.98	0.57-1.5
Chromium		110	11-14	10-14	8.8-16
Chromium VI	4.0 x 10 ²	<0.5 ^c	0.11-0.26		
Copper		59	6.0-8.3	7.8-11	5.8-9.3
Iron		58,000	8000-16000	9400-12000	6500-16000
Lead		27	4.6-8.5	4.6-27	4.9-11
Mercury	20	<0.024 ^c	0.027		
Nickel	2000	61	9.3-16	11-28	9.8-15
Silver	200	<2	0.023-0.50	0.079-0.69	0.33-0.67
Zinc		79	15-18	15-21	15-21

^aCAL - Corrective Action Levels.
^bUSGS - United States Geological Survey.
^cSite Background - Where available, site background concentrations are listed.

- USGS Background These values are provided from the USGS report titled "Elemental Composition of Surficial Materials from Central Oklahoma" (USGS, 1991). These values represent the levels of metals which naturally occur in Central Oklahoma soils.
- **Background** These levels are provided where background could be determined. Where available, background concentrations are listed for metals in soil samples taken on site, which were thought to be unaffected by releases from a unit.

Table 7-1 also gives a brief comparative evaluation of the data collected and the related action levels. The data for each detected compound are compared with the appropriate action level in order to identify those constituents (compounds) with concentrations exceeding the action levels. This identification of the compounds above the action levels provides an indication of a potential environmental problem at a specific site. In addition, this information indicates whether there is a need for conducting a CMS so that a corrective action can be implemented/undertaken at the site.

The data included in Table 7-1 are representative of the data presented in Chapter 5.0. For each soil boring, a range was identified and used in the comparison to the action levels. For the groundwater samples, the results for the most recent sampling event were included in Table 7-1.

Evaluation of the soil data for the OPSA shows that chromium VI and mercury were detected above the USGS and SDB background concentrations but below the action levels. Acetone was also detected in the soil, but the maximum value is below the action levels. Groundwater samples were not taken at this site.

8.0 Summary and Conclusions

8.1 Summary

A Phase I RFI was conducted at the OPSA to determine the presence or absence of contamination that may have resulted from operations associated with the storing and mixing of pesticides. During the RFI performed at the OPSA, a total of 13 soil samples were collected from the three soil borings drilled for chemical analysis. The analysis included VOCs, SVOCs, and metals (aluminum, arsenic, barium, beryllium, cadmium, chromium, chromium VI, copper, iron, lead, mercury, nickel, silver, and zinc). A soil gas survey consisting of three vapor gas survey points situated west of the OPSA was performed. A geotechnical sample was collected and analyzed for grain-size distribution, moisture content, CEC, and vertical permeability.

Chromium VI was detected at a maximum concentration of 0.26 mg/kg. This chromium VI detection is below SWMU CAL.

Mercury was detected at a maximum concentration of 0.027 mg/kg. This mercury concentration is below SWMU CAL.

Acetone was detected at a concentration of 130 mg/kg. This acetone concentration is below SWMU CAL.

8.2 Conclusions

The Phase I RFI conducted at the OPSA indicated that the soil samples collected from the three soil borings drilled resulted in concentrations of organics below SWMU CAL and of metals below or slightly above the USGS background data for the region and below SWMU CAL. The analytical results indicate that no impacts to the environment are present at the OPSA. Groundwater was not sampled during the investigation, thus no information regarding groundwater quality was available for the site.

Geotechnical analysis of the soil sample(s) as discussed in Section 5.2.1 suggests that in general, near surface soils are fine grained (primarily silt and clay) with relatively low vertical permeability. The low permeability soils limit infiltration of surface water, which inhibits transport of contaminants to the subsurface. If appropriate, additional geotechnical samples will be collected within contaminant source areas delineated during the Phase II field

investigation. If warranted, geotechnical data will be evaluated to determine flow and transport within the vadose zone after the completion of Phase II activities.

9.0 Recommendations for Additional Work

Based on evaluations of available data, there is no evidence of contamination at the OPSA; therefore, no corrective measures are presently recommended. Because no groundwater data have been collected from this site, it is reommended that before the OPSA is closed as an AOC, groundwater data should be collected to support conclusions or recommendations made for site closure. During the Phase II RFI, downgradient monitoring wells should be installed to monitor the shallow Hennessey groundwater in the immediate vicinity of the OPSA.

Site-specific soil background samples were not collected, nor were the soil background values available for inclusion in this Phase I RFI report. Therefore, it is recommended that site-specific soil samples from uncontaminated areas be collected for analysis during the Phase II RFI field work. This additional information along with the USGS background values should be used in the Phase II report to distinguish site-related from background concentrations in a statistically significant manner.

10.0 References

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APPENDIX A BORING LOGS

Client: TINKER AFB

Project Location: TINKER AFB, OKLAHOMA

Project Name: TINKER 5001

Project Number: 409832

SOIL BORING SB-039

DRILLING AND SAMPLING INFORMATION

Boring Location: OLD PESTICIDE STORAGE AREA, SURFACE ELEV.(FT): 1225.186 BETWEEN BUILDING 1005 AND 1007

TOTAL DEPTH(FT.): 18.5

Logged By: K. KIRSCHENMANN

Drilled By: P. GUERREIN

Date Started: 10/25/93 Date Completed: 10/25/93

GEOTECHNOLOGY, INC. Drill Rig Type: CME-75

Drilling Method: 8" HOLLOW STEM AUGER

Sampling Method: 3"x5' CONTINUOUS SAMPLER AND

2"x2' SPLIT SPOON

Notes: N 153410.174, E 2177198.420

DESCRIPTION	SAMPLE TYPE SAMPLE NO.	IN. DRIVEN IN. RECOVERED	PID, PPM	nscs	GRAPHIC LOG DEPTH IN FEET
FILL CLAY - slightly plastic; 10% fine grained sand; firm; slightly moist; dark gray (10YR-4/1);		42			· ·
sharp contact	1046	1/	0.1	cl	
SANDY CLAY — slightly plastic; 10% to 20% fine grained sand; stiff; slightly moist; red (2.5YR—5/6); gradational contact		60		cl	5-
– firm – moderately plastic; moist; dark red (2.5YR-4/8)	A 1047	60 60	0.1		
- 20% fine grained sand; soft	A 1048		0.1		10-
CLAYEY SAND - 70% to 75% fine to medium grained sand; soft; very moist; dark red (2.5YR-4/8); gradational contact - 30% clay, 70% fine grained sand; compact; wet SANDY CLAY - slightly plastic; 25% to 30% fine grained sand; firm; slightly moist; dark red (2.5YR-4/8); sharp contact	A 1049	60 60	0.1	sc C	15-
CLAYEY SAND - 30% clay, 70% fine grained sand; compact; wet; dark red (2.5YR-4/8); sharp contact - 70% fine to coarse grained sand at 17'		/ 54			
TOTAL DEPTH = 18.5 FEET					25-
DRAFT RPS DRAFT PROJ. APPRV.	DWG.	<u></u>	400		40-
BY 11/22/93 CHK CHK BY	NO.		4098 Shee		

Client: TINKER AFB Project Name: TINKER 5001

Project Location: TINKER AFB, OKLAHOMA Project Number: 409832

SOIL BORING SB-040

DRILLING AND SAMPLING INFORMATION

Boring Location: OLD PESTICIDE STORAGE AREA, SURFACE ELEV.(FT):1225.367

WEST OF BUILDING 1007 Logged By:

TOTAL DEPTH(FT.): 18.5

K. KIRSCHENMANN

Date Started: 10/25/93

Drilled By:

P. GUERREIN

GEOTECHNOLOGY, INC.

Date Completed: 10/25/93

Drill Rig Type: CME-75

Drilling Method: 8" HOLLOW STEM AUGER

Sampling Method: 3"x5' CONTINUOUS SAMPLER AND

2"x2' SPLIT SPOON

Notes:N 153395.948, E 2177174.077

DESCRIPTION	SAMPLE TYPE SAMPLE NO. IN. DRIVEN IN. RECOVERED PID, PPM USCS GRAPHIC LOG
CLAY - nonplastic; less than 10% fine grained sand; very hard; dry; strong brown (7.5YR-4/6)	<u> </u>
roll of Grant (7.5 YR-4/6)	42 cl
	1050 0.s
SANDY CLAY - slightly plastic: 10% to 20% fine grained sand; very hard; slightly moist; yellowish red (5YR-4/6)	36
) CHOWNSH 160 (31K-4/6)	cl
- black nodules	
	1051 / 0.1
- stiff: gradational contact	60 30
* Moderately election deal, and to make a	
- moderately plastic: dark red (2.5YR-4/8) - geotech sample (11.5-12.5') - soft: moist	1052 30 0.1 10 5420 30 0.1
SOLO MOIST	5420
	30
CLAYEY SAND - 60% fine to coarse grained sand; compact; wet; dark red (2.5YR-4/8);	
gradational contact <u>Santa Compacts well dark red (2.5YR-4/8)</u> :	053 054 0.1 sc 15
TOTAL DEPTH - 18.5 FEET	60
	20
	25
	25
	25
	25
	30
	30
	30
	30
DRAFT RPS DRAFT PROJ. APPRV	30

Client: TINKER AFB

Project Name: TINKER 5001

Project Location: TINKER AFB, OKLAHOMA

Project Number: 409832

SOIL BORING SB-041

DRILLING AND SAMPLING INFORMATION

Boring Location: OLD PESTICIDE STORAGE AREA, SURFACE ELEV.(FT):1226.184

WEST OF BUILDING 1005

T:

TOTAL DEPTH(FT.): 18.5

Logged By: K. KIRSCHENMANN
Drilled By: P. GUERREIN

Date Started: 10/26/93 Date Completed: 10/26/93

GEOTECHNOLOGY, INC.
Drill Rig Type: CME-75

Drilling Method: 8" HOLLOW STEM AUGER

Sampling Method: 3"x5' CONTINUOUS SAMPLER AND

2"x2' SPLIT SPOON

Notes:N 153435.613, E 2177169.986

DESCRIPTION	SAMPLE TYPE SAMPLE NO.	IN. DRIVEN	PID, PPM	USCS	
CLAY - nonplastic; less than 10% fine grained sand; hard; dry; very dark gravish brown (2.5YR-3/2)		42 /		01	
- slightly plastic: stiff: slightly moist: gradational	A 1058				
SANDY CLAY - nonplastic; 10% to 20% fine grained sand; stiff; slightly moist; strong brown (7.5YR-4/6); gradational contact		60 60	0.1	cl	5-
- slightly plastic: hard; dark red (2.5YR-4/8)	A 1059				
- 25% to 30% fine grained sand; firm		60 60	0.1		10 -
- moderately plastic; soft; moist	1060	60	0.1		
		60			, .
CLAYEY SAND - 30% to 40% clay, 60% to 70% fine to coarse grained sand; compact; wet; dark red (2.5YR-4/8); gradational contact - 30% clay, 70% coarse to medium grained sand; sharp contact	1061		0.1	sc	15
TOTAL DEPTH - 18.5 FEET		60			20-
					25-
		-			
					30-
					35-
					40-
DRAFT RPS DRAFT PROJ. APPRV.	DWG.	Т	400	832-A	

APPENDIX B SOIL GAS REPORT

SOIL GAS SURVEY

TINKER AIR FORCE BASE OKLAHOMA CITY, OKLAHOMA

PREPARED FOR

IT CORPORATION
312 DIRECTORS DRIVE
KNOXVILLE, TENNESSEE 37923

PREPARED BY

TARGET ENVIRONMENTAL SERVICES, INC.
9180 RUMSEY ROAD
COLUMBIA, MARYLAND 21045
(410) 992-6622

DECEMBER 1993

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EXECUTIVE SUMMARY

On November 9-11, 1993, TARGET Environmental Services, Inc. (TARGET) conducted soil gas surveys in three areas at Tinker Air Force Base in Oklahoma City, Oklahoma. The areas included the Fuel Truck Maintenance Area, Sludge Drying Beds and Old Pesticide Storage Area. A total of 45 soil gas samples were collected from depths of 9 to 10 feet. The samples were analyzed on a gas chromatograph equipped with a flame ionization detector (GC/FID) for petroleum hydrocarbons and an electron capture detector for chlorinated hydrocarbons. The objective of the surveys was to identify potential areas of volatile hydrocarbon contamination at each of the sites through quantitative analysis of the vadose zone soil gas.

GC/FID and GC/ECD analysis of the samples from Fuel Truck Maintenance area revealed that none of the individual petroleum or chlorinated analytes were present in any of the samples.

Low levels of tetrachloroethene (PCE) were present in two samples from the southwestern corner of the Sludge Drying Beds area. None of the remaining chlorinated analytes were present above the 1 µg/l reporting limit in any of the samples. GC/FID analysis revealed only a very low level of Total FID Volatiles in a sample from the northern survey boundary. None of the individual petroleum analytes were present above the 1 µg/l reporting limit in this or any other sample from this site. Soil gas data does not suggest the presence of a significant petroleum hydrocarbon contamination problem in the Sludge Drying Beds area.

GC/ECD analysis revealed only a low level of 1,1-dichloroethene (1,1-DCE) in one sample from the Old Pesticide Storage Area. GC/FID analysis revealed that none of the individual petroleum analytes were present above the 1 µg/l reporting limit in any of the samples from this area.

Introduction

IT Corporation (IT) contracted Target Environmental Services, Inc. (TARGET) to perform soil gas surveys in three areas of Tinker Air Force Base in Oklahoma City, Oklahoma. The areas included the Fuel Truck Maintenance Area, Sludge Drying Beds and Old Pesticide Storage Area. The objective of the surveys was to identify potential areas of volatile hydrocarbon contamination at each of the sites through quantitative analysis of the vadose zone soil gas.

The surveys were designed by IT to cover the areas of concern with a total of 45 samples. Sixteen (16) samples were allocated to the Fuel Truck Maintenance Area, 26 to the Sludge Drying Beds and 3 to the Old Pesticide Storage Area. Additional information was not provided. A 10-foot sampling depth was planned. The field phase of the soil gas surveys was conducted on November 9-11, 1993.

Sample Collection and Analysis

Soil gas samples were collected at a total of 45 locations at the site, as shown in Figures 1A through 1C. Sixteen (16) samples were collected from the Fuel Truck Maintenance Area (Figure 1A), 26 from the Sludge Drying Beds (Figure 1B) and 3 from the Old Pesticide Storage Area (Figure 1C). Samples 2 and 7 from the Fuel Truck Maintenance Area were collected from a depth of 9 feet due to probe refusal. All remaining samples were collected from a depth of 10 feet. A detailed explanation of the sampling procedure is provided in Appendix A.

All of the samples collected during the field phase of the survey were subjected to dual analyses. One analysis was conducted according to EPA Method 8010 (modified) on a gas chromatograph equipped with an electron capture detector (ECD), and using direct injection.

Specific analytes standardized for this analysis were:

1,1-dichloroethene (11DCE)
methylene chloride (CH₂Cl₂)
trans-1,2-dichloroethene (t12DCE)
1,1-dichloroethane (11DCA)
cis-1,2-dichloroethene (c12DCE)
chloroform (CHCl₃)
1,1,1-trichloroethane (111TCA)
carbon tetrachloride (CCl₄)
trichloroethene (TCE)
1,1,2-trichloroethane (112TCA)
tetrachloroethene (PCE)

The chlorinated hydrocarbons in this suite were chosen because of their common usage in industrial solvents, and/or their degradational relationship to commonly used compounds.

The second analysis was conducted according to EPA Method 8020 (modified) on a gas chromatograph equipped with a flame ionization detector (FID), and using direct injection. The analytes selected for standardization in this analysis were:

benzene
toluene
ethylbenzene
meta- and para- xylene
ortho- xylene

These compounds were chosen because of their utility in evaluating the presence of fuel products, or petroleum based solvents. An explanation of the laboratory procedures is provided in Appendix B.

The tabulated results of the laboratory analyses of the soil gas samples are reported in micrograms per liter ($\mu g/l$) in Tables 1 and 2. Although "micrograms per liter" is equivalent to "parts per billion (ν/ν)" in water analyses, they are not equivalent in gas analyses, due to the difference in the mass of equal volumes of water and gas matrices. The xylenes concentrations

reported in Table 1 are the sum of the m- and p-xylene and the o-xylene concentrations for each sample.

Quality Assurance/Quality Control (QA/QC) Evaluation

Field QA/QC Samples

Field control samples were collected at the beginning and end of each day's field activities. These QA/QC samples were obtained by filtering ambient air through a dust and organic vapor filter cartridge and encapsulating as described in the "Field Procedures" in Appendix A. The laboratory results are reported in Tables 1 and 2. Concentrations of all analytes were below the reporting limit in all field control samples, indicating that the QA/QC measures employed were sufficient to prevent cross-contamination of the samples during collection.

Laboratory QA/QC Samples

To document analytical repeatability, a duplicate analysis was performed on every tenth field sample. Laboratory blanks of nitrogen gas were also analyzed after every tenth field sample. The results of these analyses are reported in Tables 1 and 2. The duplicate analyses were within acceptable limits. Concentrations of all analytes were below the reporting limit in all laboratory blanks.

Results and Interpretation

In order to provide graphic presentation of the results, selected individual data sets in Tables 1 and 2 have been mapped and contoured to produce Figures 2 through 4. Dashed contours are used where patterns are extrapolated into areas of less complete data, or as auxiliary contours. Map sample points with no data shown indicate that the analyte concentrations in the sample

were below the reporting limit. An explanation of the terminology used in this report is provided in Appendix C. Each of the three sites is discussed separately below.

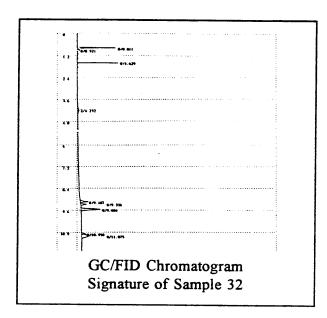
Fuel Truck Maintenance Area

GC/FID and GC/ECD analysis of the samples from this area revealed that none of the individual petroleum or chlorinated analytes were present in any of the samples.

Sludge Drying Beds

GC/ECD analysis revealed low levels of tetrachloroethene (PCE, Figure 2) in Samples 20 and 22, from the southwestern corner of the survey area. None of the remaining chlorinated analytes were present above the 1 µg/l reporting limit in any of the samples.

GC/FID analysis revealed only a very low level of Total FID Volatiles (Figure 3) in Sample 32, from the northern survey boundary. None of the individual petroleum analytes were present above the 1 µg/l reporting limit in this or any other sample from this site. The FID



chromatogram signature of Sample 32 (left) reveals a few small late-eluting peaks which represent unidentified hydrocarbons of relatively low volatility. The very low concentration of hydrocarbons represented by these peaks does not suggest the presence of a significant petroleum hydrocarbon contamination problem in this area.

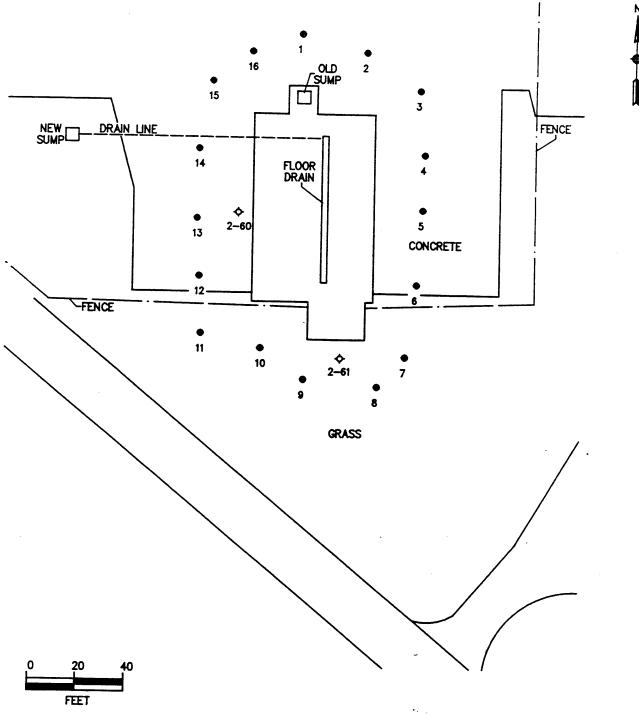
Old Pesticide Storage Area

GC/ECD analysis revealed a low level of 1,1-dichloroethene (1,1-DCE, Figure 4) in Sample 45. None of the remaining chlorinated analytes were present above the 1 μ g/l reporting limit in any of the samples.

GC/FID analysis revealed that none of the individual petroleum analytes were present above the 1 μ g/l reporting limit in any of the samples.

Conclusions

- Petroleum and chlorinated hydrocarbon contamination was not present in the Fuel Truck
 Maintenance Area.
- Tetrachloroethene (PCE) was present near the southwestern corner of the Sludge Drying Beds Area. The very low level of petroleum hydrocarbons observed at the northern boundary of this area does not suggest the presence of significant petroleum-related contamination.
- ▶ 1,1-Dichloroethene (1,1-DCE) was present in the Old Pesticide Storage Area.



SOIL GAS SAMPLE LOCATION

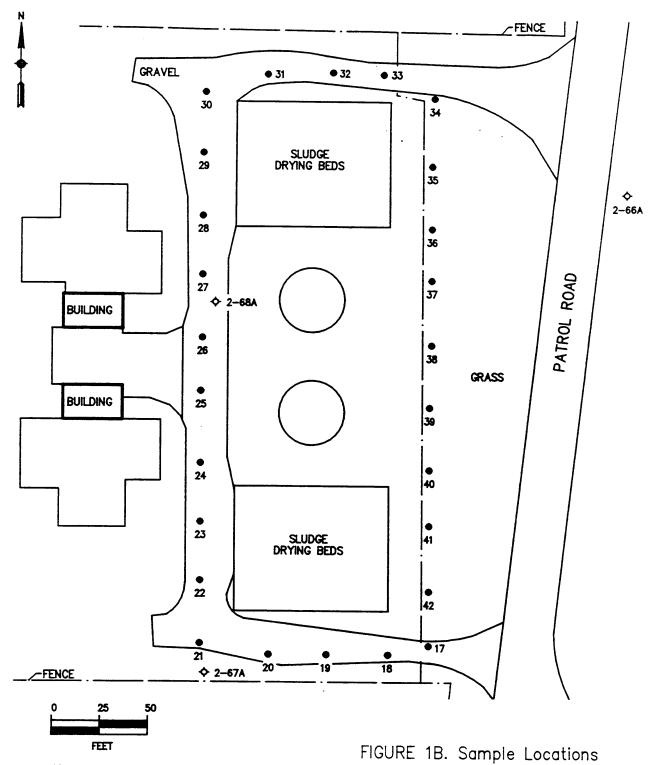
PROPOSED DEEP MONITORING WELL LOCATION

FIGURE 1A. Sample Locations



This map is integral to a written report and should be viewed in that context.

TINKER AIR FORCE BASE FUEL TRUCK MAINTENANCE AREA OKLAHOMA CITY, OKLAHOMA



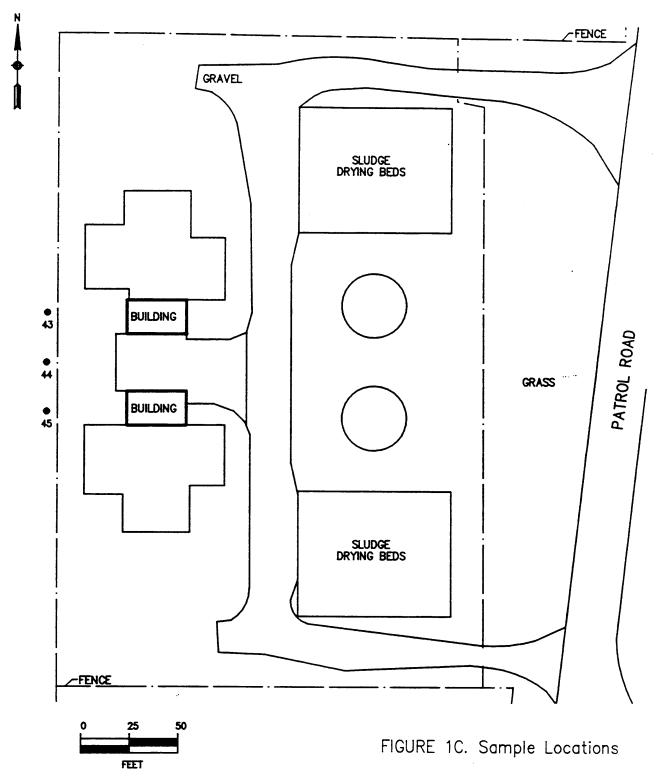
• SOIL GAS SAMPLE LOCATION

PROPOSED DEEP MONITORING WELL LOCATION

ARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

TINKER AIR FORCE BASE SLUDGE DRYING BEDS OKLAHOMA CITY, OKLAHOMA

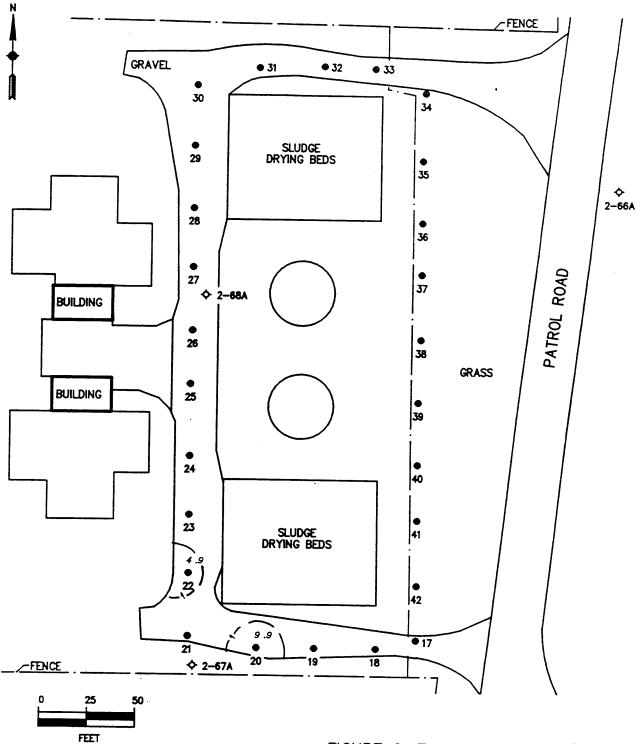


• SOIL GAS SAMPLE LOCATION



This map is integral to a written report and should be viewed in that context.

TINKER AIR FORCE BASE OLD PESTICIDE STORAGE AREA OKLAHOMA CITY, OKLAHOMA



• SOIL GAS SAMPLE LOCATION

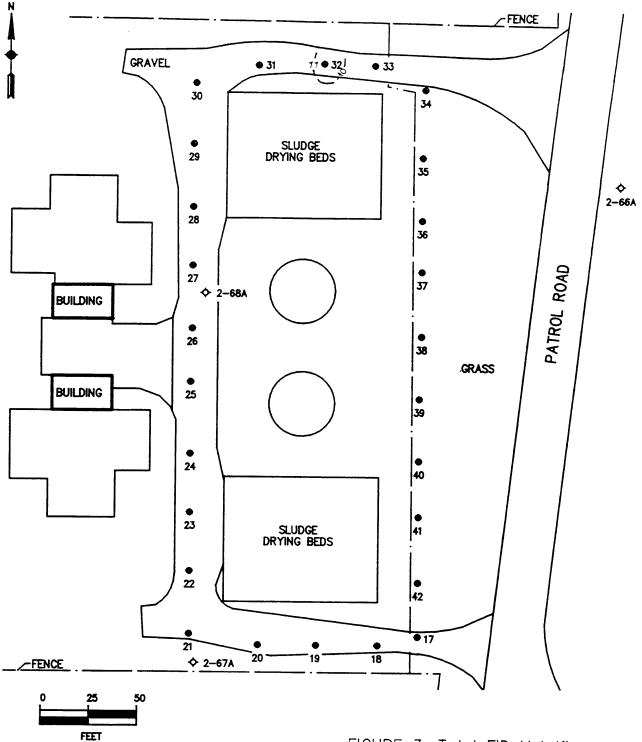
PROPOSED DEEP MONITORING WELL LOCATION

FIGURE 2. Tetrachloroethene (PCE) $(\mu g/I)$



This map is integral to a written report and should be viewed in that context.

TINKER AIR FORCE BASE SLUDGE DRYING BEDS OKLAHOMA CITY, OKLAHOMA



SOIL GAS SAMPLE LOCATION

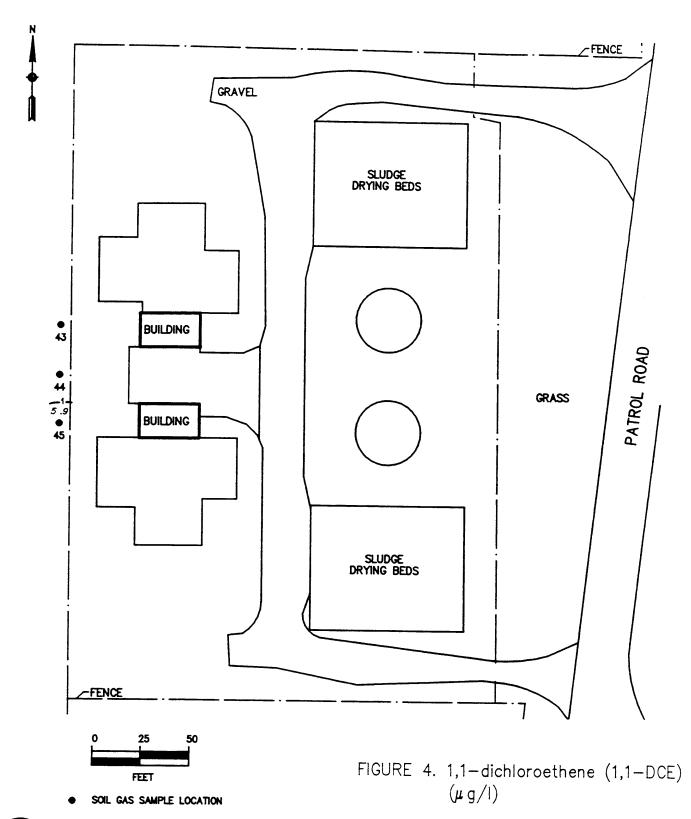
 PROPOSED DEEP MONITORING WELL LOCATION

FIGURE 3. Total FID Volatiles (calc'd μ g/l)



This map is integral to a written report and should be viewed in that context.

TINKER AIR FORCE BASE SLUDGE DRYING BEDS OKLAHOMA CITY, OKLAHOMA





This map is integral to a written report and should be viewed in that context.

TINKER AIR FORCE BASE OLD PESTICIDE STORAGE AREA OKLAHOMA CITY, OKLAHOMA

 $\frac{\text{TABLE 1}}{\text{ANALYTE CONCENTRATIONS VIA GC/FID } (\mu\text{g/l})}$

			ETHYL-		TOTAL FID
SAMPLE	BENZENE	TOLUENE	BENZENE	XYLENES	VOLATILES*
REPORTING	1.0	1.0	1.0	1.0	10
LIMIT					
1	<1.0	<1.0	<1.0	<1.0	<10
2	<1.0	<1.0	<1.0	<1.0	<10
3	<1.0	<1.0	<1.0	<1.0	<10
4	<1.0	<1.0	<1.0	<1.0	<10
5	<1.0	<1.0	<1.0	<1.0	<10
6	<1.0	<1.0	<1.0	<1.0	<10
7	<1.0	<1.0	<1.0	<1.0	<10
8	<1.0	<1.0	<1.0	<1.0	<10
9	<1.0	<1.0	<1.0	<1.0	<10
10	<1.0	<1.0	<1.0	<1.0	<10
11	<1.0	<1.0	<1.0	<1.0	<10
12	<1.0	<1.0	<1.0	<1.0	<10
13	<1.0	<1.0	<1.0	<1.0	<10
14	<1.0	<1.0	<1.0	<1.0	<10
15	<1.0	<1.0	<1.0	<1.0	<10
16	<1.0	<1.0	<1.0	<1.0	<10
17	<1.0	<1.0	<1.0	<1.0	<10
18	<1.0	<1.0	<1.0	<1.0	<10
19	<1.0	<1.0	<1.0	<1.0	<10
20	<1.0	<1.0	<1.0	<1.0	<10
21	<1.0	<1.0	<1.0	<1.0	<10
22	<1.0	<1.0	<1.0	<1.0	<10
23	<1.0	<1.0	<1.0	<1.0	<10
24	<1.0	<1.0	<1.0	<1.0	<10
25	<1.0	<1.0	<1.0	<1.0	<10
26	<1.0	<1.0	<1.0	<1.0	<10
27	<1.0	<1.0	<1.0	<1.0	<10
28	<1.0	<1.0	<1.0	<1.0	<10
29	<1.0	<1.0	<1.0	<1.0	<10
30	<1.0	<1.0	<1.0	<1.0	<10
31	<1.0	<1.0	<1.0	<1.0	<10
32	<1.0	<1.0	<1.0	<1.0	11
33	<1.0	<1.0	<1.0	<1.0	<10

^{*} CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

			ETHYL-		TOTAL FID
SAMPLE	BENZENE	TOLUENE	BENZENE	XYLENES	VOLATILES*
REPORTING	1.0	1.0	1.0	1.0	10
LIMIT					
•					
34	<1.0	<1.0	<1.0	<1.0	<10
35	<1.0	<1.0	<1.0	<1.0	<10
36	<1.0	<1.0	<1.0	<1.0	<10
37	<1.0	<1.0	<1.0	<1.0	<10
38	<1.0	<1.0	<1.0	<1.0	<10
39	-4.0	-14.0	-4.0	.4.6	
40	<1.0	<1.0	<1.0	<1.0	<10
41	<1.0	<1.0	<1.0	<1.0	<10
42	<1.0	<1.0	<1.0	<1.0	<10
	<1.0	<1.0	<1.0	<1.0	<10
43	<1.0	<1.0	<1.0	<1.0	<10
44	<1.0	<1.0	<1.0	<1.0	<10
45	<1.0	<1.0	<1.0	<1.0	<10
FIELD CONTROL S	AMPLES				
101	<1.0	<1.0	<1.0	<1.0	<10
102	<1.0	<1.0	<1.0	<1.0	<10
103	<1.0	<1.0	<1.0	<1.0	<10
104	<1.0	<1.0	<1.0	<1.0	<10
105	<1.0	<1.0	<1.0	<1.0	<10
106	<1.0	<1.0	<1.0	<1.0	<10
LABORATORY DUP	LICATE ANALY	<u>rsis</u>			
10	<1.0	-10	<i>-</i> 4 0	-4.0	-40
10R	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0	<10
1010	~1.0	~1.0	~1.0	<1.0	<10
33	<1.0	<1.0	<1.0	<1.0	<10
33R	<1.0	<1.0	<1.0	<1.0	<10
33.1	71.0	11.0	11.0	~1.0	~10
45	<1.0	<1.0	<1.0	<1.0	<10
45R	<1.0	<1.0	<1.0	<1.0	<10
	-1.0	41.0	-1.0	1.0	110
106	<1.0	<1.0	<1.0	<1.0	<10
106R	<1.0	<1.0	<1.0	<1.0	<10
		••••	• • • •	- 1.0	5
101	<1.0	<1.0	<1.0	<1.0	<10
101R	<1.0	<1.0	<1.0	<1.0	<10
			- 1.0	- 1.0	5

^{*} CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE

TABLE 1 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/FID (µg/l)

			ETHYL-		TOTAL FID
SAMPLE	BENZENE	TOLUENE	BENZENE	XYLENES	VOLATILES*
REPORTING	1.0	1.0	1.0	1.0	10
LIMIT					
LABORATORY BLAN	<u>KS</u>				
10B	<1.0	<1.0	<1.0	<1.0	<10
33B	<1.0	<1.0	<1.0	<1.0	<10
45B	<1.0	<1.0	<1.0	<1.0	<10
106B	<1.0	<1.0	<1.0	<1.0	<10
101B	<1.0	<1.0	<1.0	<1.0	<10

^{*} CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE

TABLE 2

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2CI2	t12DCE	11DCA	c12DCE	СНСІЗ	111TCA	CCI4	TOF	440704	
REPORTING	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	112TCA 1.0	1.0
LIMIT								•••	1.0	1.0	1.0
1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
•	-4.6	.4.6									
6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
44	-4.0	-4.0	-4.0								
11 12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
13 14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
16	<1.0	<1.0	<1.0	<1.0	<1.0	-4.0	44.0	.4.0	-4.0		
17	<1.0	<1.0	<1.0 <1.0	<1.0 <1.0	<1.0 <1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
18	<1.0	<1.0	<1.0	<1.0 <1.0	<1.0 <1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19	<1.0	<1.0	<1.0 <1.0	<1.0	<1.0 <1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
20	<1.0	<1.0	<1.0 <1.0	<1.0 <1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
20	11.0	1.0	~1.0	\1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	9.9
21	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
22	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.9
23	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 <1.0	4. 9 <1.0
24	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 <1.0
25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
						-1.0	11.0	11.0	~1.0	~1.0	~1.0
26	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
27	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
28	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
29	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
30	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
							•••			•	- 1.0
31	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
32	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
										•••	••••

11DCE = 1,1-dichloroethene

11DCA = 1,1-dichloroethane

111TCA = 1,1,1-trichioroethane

112TCA = 1,1,2-trichloroethane

CH2Cl2 = methylene chloride

c12DCE = cis-1,2-dichloroethene

CCI4 = carbon tetrachioride

PCE = tetrachloroethene

t12DCE = trans-1,2-dichloroethene

CHCI3 = chloroform

TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/I)

SAMPLE	11DCE	CH2CI2	t12DCE	11DCA	c12DCE	CHCI3	111TCA	CCH	TCE	112TCA	PCE
REPORTING	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LIMIT											
33	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
34	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
35	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
36	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
37	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
38	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
39	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
41	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
42	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
43	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
44	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
45	5.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FIELD CONTRO	OL SAMPLES										
101	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
102	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
103	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
104	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
105	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
106	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
LABORATORY	DUPLICATE A	<u>ANALYSIS</u>									
10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
10R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
33	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
33R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
45	5.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
45R	5.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene 11DCA = 1,1-dichloroethene

11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane

112TCA = 1,1,2-trichloroethane

CH2Cl2 = methylene chloride

c12DCE = cis-1,2-dichloroethene

CCI4 = carbon tetrachloride

PCE = tetrachioroethene

t12DCE = trans-1,2-dichloroethene

CHCI3 = chloroform

TCE = trichloroethene

TABLE 2 (CONT.)

ANALYTE CONCENTRATIONS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2C12	t12DCE	11DCA	c12DCE	СНСІЗ	111TCA	CCH	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LABORATORY	DUPLICATE	ANALYSIS	(cont.)								
101	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
101R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
106	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
106R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
LABORATORY	<u>BLANKS</u>										
10B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
33B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
45B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
101B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
106B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene

11DCA = 1,1-dichloroethane

111TCA = 1,1,1-trichioroethane

112TCA = 1,1,2-trichioroethane

CH2Cl2 = methylene chloride

c12DCE = cis-1,2-dichloroethene

CCI4 = carbon tetrachloride

PCE = tetrachloroethene

t12DCE = trans-1,2-dichloroethene

CHCI3 = chloroform

TCE = trichloroethene

FIELD PROCEDURES

Prior to the collection of each sample, the entire sampling system (including down-hole probe, tubing, syringe, and all associated plumbing) was purged with ambient air drawn through an organic vapor filter cartridge. To collect the samples, a van-mounted hydraulic probe was used to advance connected 3-foot sections of 1-inch diameter threaded steel casing down to the sampling depth. Once at depth, the casing was hydraulically raised several inches in order to release a disposable drive point and open the bottom of the casing. A teflon line with a perforated hollow stainless steel probe end was inserted into the casing to the bottom of the hole, and the bottom-hole line perforations were isolated from the up-hole annulus by an inflatable packer. A sample of in-situ soil gas was then withdrawn through the probe and used to purge atmospheric air from the sampling system. A second sample of soil gas was withdrawn through the probe and encapsulated in a pre-evacuated glass vial at two atmospheres of pressure (15 psig). The self-sealing vial was detached from the sampling system, packaged, labeled, and stored for laboratory analysis. All sampling holes were backfilled with bentonite and the surface repaired with like material upon completion of the sampling.

Prior to the day's field activities all sampling equipment and probes were decontaminated by washing with soapy water and rinsing thoroughly. Internal surfaces were flushed dry using prepurified nitrogen or filtered ambient air, and external surfaces were wiped clean using clean paper towels.

LABORATORY PROCEDURES

The analyses were performed using a research grade gas chromatograph (Shimadzu Model 14A), equipped with capillary columns, thermal oven, Shimadzu CR4A data processor and associated hardware. The GC was equipped with an electron capture detector (ECD) for chlorinated hydrocarbons and a flame ionization detector (FID) for petroleum and non-halogenated compounds. 800 microliters (µl) of sample was directly injected into the GC using a Shimadzu gas-tight syringe.

The ECD and FID stock standards were purchased from Scott Specialty Gases (Plumsteadville, PA). The concentration of the standard is certified by Scott and is traceable to weights certified by the State of Pennsylvania. The analytical equipment was calibrated using a 3-point instrument-response curve and injection of known concentrations of the target compounds. Retention times of the standards were used to identify the peaks in the chromatograms of the field samples, and their response factors were used to calculate the analyte concentrations.

The standards were prepared by filling a Tedlar bag from a tank containing the stock standards. Vials were evacuated, pressurized with nitrogen and then equilibrated to atmospheric pressure. Aliquots of known quantity were removed from the vials and replaced with the same size aliquot of the standard from the Tedlar bag. The lowest standard concentration was near, but above, the instrument detection limit, the second concentration was within the expected range of concentrations in the field samples, and the third concentration was below the upper linear range of the instrument. Three-point least-squares linear regression calibration curves were generated for each analyte. The correlation coefficients were calculated for each standardized

analyte to ensure that they equalled or exceeded 0.99. The retention time windows were determined by examining the retention times of the three standards. The mid range retention time was selected with a window of \pm 0.05 minutes. A check standard was run to confirm the retention times and instrument response no less often than after every 40 samples. Check standards were also run at the beginning of each day and new calibration curves were generated as described above whenever a retention time shift or change in instrument response occurred which caused the concentrations of analytes in the check standards to vary by more than 20% from the original concentrations.

The ECD analysis was conducted at instrument Range 0. The FID analysis was conducted at instrument Range 1. The syringe was cleaned using a purge cycle with UPC nitrogen. The syringe was purged for 10 seconds prior to removal of an aliquot from the sample vial and for 10 seconds after injection of the sample into the GC.

Total FID Volatiles values were generated by summing the areas of all integrated chromatogram peaks and calculated using the instrument response factor for toluene. Injection peaks, which also contain the light hydrocarbon methane, were excluded to avoid the skewing of Total FID Volatiles values due to injection disturbances and biogenic methane. For samples with low hydrocarbon concentrations, the calculated Total FID Volatiles concentration is occasionally lower than the sum of the individual analytes. This is because the response factor used for the Total FID Volatiles calculation is a constant, whereas the individual analyte response factors are compound specific. It is important to understand that the Total FID Volatiles levels reported are relative, not absolute, values.

DETECTABILITY & TERMINOLOGY

Detectability

The soil gas survey data presented in this report are the result of precise sampling and measurement of contaminant concentrations in the vadose zone. Analyte detection at a particular location is representative of vapor, dissolved, and/or liquid phase contamination at that location. The presence of detectable levels of target analytes in the vadose zone is dependent upon several factors, including the presence of vapor-phase hydrocarbons or dissolved or liquid concentrations adequate to facilitate volatilization into the unsaturated zone.

Terminology

In order to prevent misunderstanding of certain terms used in TARGET's reports, the following clarifications are offered:

- Analyte refers to any of the hydrocarbons standardized for quantification in the chromatographic analysis.
- Anomaly refers to an area where hydrocarbons were measured in excess of what would normally be considered "natural" or "background" levels.
- Elevated and significant are used to describe concentrations of analytes which indicate the existence of a potential problem in the soil or ground water.
- Feature is used in reference to a discernible pattern in the contoured data. It denotes a contour form rather than a definite or separate chemical occurrence.
- Indicates is used when evidence dictates a unique conclusion. Suggests is used when several explanations of certain evidence are possible, but one in particular seems more likely. As a result, "indicates" carries a higher degree of confidence in a conclusion than does "suggests."

Occurrence is used to indicate an area where chemical compounds are present in sufficient concentrations to be detected by the analysis of soil vapors. The term is not indicative of any specific mode of occurrence (vapor, dissolved, etc.), and does not necessarily indicate or suggest the presence of "free product" or "phase-separated hydrocarbons."

Reporting Limit refers to the minimum concentration reported for each analyte.

Vadose zone represents the unsaturated zone between the ground water table and the ground surface.

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APPENDIX C DATA TABLES, CERTIFICATES OF ANALYSIS, CHAIN-OF-CUSTODY

ANALYTICAL RESULTS SOIL

Well/Boring: Sample ID: Depth:		SB-039 A1046 2 - 2.5		8 4 ~	SB-039 A1047 '- 7.5		3 4 1	SB-039 A1048 1.5 - 12			SB-039 A1049 5 - 15 5		. ∝ .	SB-040 A1050	
Parameters	Result	OFR	Units	Resul t	QFR	Units	Result	OFR :	Units	Result	G. S.	Units	Result	G. A.	Units
Altmin	12000	2	17,000	00001	=		30,72		;						
Arsenic - Graphite Furnace	200	z 2	mg/kg	0000	z :	mg/kg	007,	2:	mg/kg	9500	2	mg/kg	15000	2	mg/kg
Baring ordered and a		E :	BY/E	7.6	z :	mg/kg	ρ. 	Z	mg/kg	3.3	z	mg/kg	2.3	z	mg/kg
Beryllin	200	z	mg/kg	3.	Z	mg∕kg	390	z	mg/kg	069	z	mg/kg	230	2	mg/kg
	* e		mg/kg	٠. ٠		mg/kg	1.2		mg/kg	9.		mg/kg	8.1		mg/kg
	 		mg/kg	1.s		mg/kg	0.46		mg/kg	0.26		mg/kg	0.98		mg/kg
Chromitan VI	7		mg/kg	- č		mg/kg	- C	;	mg/kg	13		mg/kg	14		mg/kg
Conner	- M		mg/kg	97.0		mg/kg	, , ,	>	mg/kg	<0.50	-	mg/kg	.0.	>	mg/kg
Iron	16000	2	mg/kg	1300	2	mg/kg	o.6	:	mg/kg	6.7		mg/kg	7.8		mg/kg
Lead - Graphite Furnace	222	e a	19/Kg	12000	Z 2	mg/kg	9000	2:	mg/kg	12000	Z	mg/kg	12000	2	mg/kg
Mercury	0.07	E	2/7/2E		z :	mg/kg	0.0	2 :	mg/kg	8.5	2	mg/kg	9.5	z	mg/kg
Nickel	13.05/		119/Kg	16.022	>	mg/kg	<0.020 0.020	>	mg/kg	<0.022	>	mg/kg	<0.024	>	mg/kg
Silver	2		19/ Kg	• ; • •		19/kg	5.5		mg/kg	=		mg/kg	=		mg/kg
Zine	 		mg/kg	- 0+		mg/kg	0.023		mg/kg	0.26		mg/kg	0.079		mg/kg
1 2 4-Trichlorobenzene	022	=	8 / SI	0,0	:	mg/kg	2	:	mg/kg	5		mg/kg	21		mg/kg
1 2-Dichlorobonzene	0.000	> :	mg/kg	40.330	> :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg
1 3-Dichlorobenzene	0.330	> =	mg/kg	<0.330 0.330	> :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg
1.4-Dichlorobenzene	0220	> :	mg/kg	<0.330	> :	mg/kg	<0.350	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2 4 Strichlorophenol	0.00 0.00 0.00	> =	mg/kg	<0.330	> :	mg/kg	<0.330 0.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2.4.6-Trichlorophenol	20.00	> =	119/Kg	22.07	> :	mg/kg	<0.825 6.75	- :	mg/kg	<0.825	>	mg/kg	<0.825	-	mg/kg
2.4-Dichlorophenol	330	> =	19/ Ag	220	> =	mg/kg	40.330 6.730	> :	mg/kg	<0.330	> :	mg/kg	<0.330	>	mg/kg
2 4-Dimethylphenol	0000	> =	19/ kg	0.00	> :	mg/kg	40.330 6.330	> :	mg/kg	<0.550	>	mg/kg	<0.330	>	mg/kg
2 4-Dinitropenal	2000 2000 2000	> :	19/Kg	0.00	> :	mg/kg	<0.330 0.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2 4-Dinitrotoluana	22.07	> =	mg/kg	62.05	> :	mg/kg	<0.825 225	> :	mg/kg	<0.825	-	mg/kg	<0.825	>	mg/kg
2 A:Dinitrotolumm	022.07)	IIIIJ/RG	0.330	> :	mg/kg	<0.330 0.230	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2-Chloropaphthalana	0.550	> :	mg/kg	<0.330	> :	mg/kg	<0.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2.Chlorophood	0.330	> :	mg/kg	<0.330 220	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2-Mothyl monthship one	0.000	> :	mg/kg	<0.350	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2-Methylphonel	40.330 40.330	> :	₩9/K9	<0.350 0.350	- :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2-Nithmonilino	40.550 50.50	> :	mg/kg	<0.350	- :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	ma/ka
2-Nitrophonol	0.020	> :	mg/kg	<0.825 6.335	> :	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg	<0.825	_	mg/kg
	000.00	>	mg/kg	<0.350	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for
that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.

Well/Boring: Sample ID: Depth:	2 8	SB-039 A1046 2 - 2.5		847	SB-039 A1047 7 - 7.5		s 11.	SB-039 A1048 11.5 - 12		s A 21	SB-039 A1049 5 - 15.5		SI A	SB-040 A1050 2 - 2.5	
Parameters	Result	QFR	Units	Resul t	OFR	Units	Result	OFR	Units	Result	OFR	Units	Result	OFR R	Units
3 31-Dichlorobenzidine	022 07	=	17/10		=		410	:							
4-Nitrophilips	0.00	> :	mg/kg	0.550	> :	mg/kg	<0.35U	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
/ A-Dinitro-2-mothylphonel	60.05	> :	mg/kg	•	- :	щg/кg	<0.825	>	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg
4,0-Dimitio-2-methytphenot	40.825 525	> :	mg/kg	•	>	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg
4-bromophenyt-phenytether	<0.330	> :	mg/kg	•	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
4-chloro-3-methylphenol	<0.330	> :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
4-Chioroanicine	<0.330 0.330	> :	mg/kg		→ :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
4-chiorophenyl-phenyletner	<0.330 6.330	> :	mg/kg	<0.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	,	> :	mg/kg	•	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
4-7-1-00-1-1-1-6-7-1-6-7-1-6-7-1-6-7-1-6-7-1-6-7-1-6-7-1-6-7-1-6-7-1-6-7-1-6-7-1-6-7-1-6-7-1-6-7-1-6-7-1-6-7-1	40.025 0.025	> :	mg/kg		- :	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg
Acepenhthene	60.05	> :	mg/kg		> :	mg/kg	<0.825	-	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg
According	50.550	> :	⊞ 9/kg		> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Anthrocon	40.330 40.330	ɔ :	mg/kg		> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Bento(e) enthrocono	<0.330 220 220	> :	mg/kg		- :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	40.330 220	> :	mg/kg	<0.350	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg
Benzo(h) fliorenthon	40.330 40.330	> :	mg/kg		- :	mg/kg	<0.330	-	mg/kg	<0.330	_	mg/kg	<0.330	-	mg/kg
Benzo(a) Luoi antinene Benzo(a h i) monulono	0.330	> :	mg/kg		> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Benzo(k) (lipresthere	0.050	> :	mg/kg	<0.330	> :	mg/kg	<0.330	- :	mg/kg	<0.330	-	mg/kg	<0.330	ם	mg/kg
Reproir Arid	0.550	> =	mg/kg		> :	mg/kg	<0.350	- :	mg/kg	<0.330	=	mg/kg	<0.330	>	mg/kg
Benzyl alcohol	055.0>	> =	24/5E		> :	mg/kg	<0.550 220	> :	mg/kg	<0.330	> :	mg/kg	<0.330	>	mg/kg
Butylbenzylphthalate	<0.330	> =	ma/ka		> =	100/kg	055.0>	> =	19/kg	052.07	> :	mg/kg	<0.550	> :	mg/kg
Chrysene	<0.330	_	ma/ka		-	mo/ka	<0.330	=	94/5E	0000	> =	113/Kg	0.030	> :	mg/kg
Di-n-butylphthalate	<0.330	· >	mg/kg) –	mg/kg mg/kg	<0.330) =	84/8E	40.330	> =	mg/kg	0.550	> =	mg/kg
Di-n-octylphthalate	<0.330	-	mo/ka	<0.330	=	mo/kg	022 0>	· =	64/cm	022) =	94/gr	0.00	> :	6¥/6III
Dibenzo(a,h)anthracene	<0.330	· ⊃	mg/ka		· =	mo/ka	<0.330 <0.330	> =	24/2m	0000	> =	mg/kg	<0.05 0.220	> :	mg/kg
Dibenzofuran	<0.330	=	10/kg) =	04/0m		> =	D 4/00	0.00) :	13/Kg	0.00	> :	mg/kg
Diethylphthalate	<0.330	=	94/0E	•	> =	119/Kg	0.330	> :	mg/kg	<0.330 6.330	- :	mg/kg	<0.550	>	mg/kg
Dimethylohthalate	<0.330	> =	24/5E	•	> =	119/Rg	0.220	> :	mg/kg	<0.330 6.330	> :	mg/kg	<0.330	> :	mg/kg
Fluoranthene	<0.330) =	24/cm	•	> =	19/ kg	0.55	> :	mg/ kg	\$0.330 \$770	> :	mg/kg	<0.350 0.550	-	mg/kg
Fluorene	<0.330) =	mo/kg	330	> =	13/Kg	0.330	> =	mg/kg	<0.330 220 220	> :	mg/kg	<0.330	ɔ :	mg/kg
Hexachlorobenzene	<0.330) =	mo/ka	•	> =	13/ Kg	70.330	> =	mg/kg mg/kg	<0.330 230	> :	mg/kg	<0.350	- :	mg/kg
)	n n		•	2	0000	>	fy/fill	000.00	>	mg/kg	<0.350	-	mg/kg

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for that specific analysis
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QFR = Qualifier
Analytical data has not been validated.

Well/Boring:	S	SB-039			-030			020-8			020			2	
Sample 1D: Depth:	~ ~	A1046 2 - 2.5		, ~ ~	A1047 7 - 7.5			A1048 11.5 - 12		° 4 21	A1049 15 - 15.5		ñ ∀ ∾	2 - 2.5	
Parameters	Resul t	OFR	Units	Result	QFR	Units	Result	OFR	Units	Resul t	OFR	Units	Result	OFR	Units
Hexachlorobutadiene	<0.330		ma/ka	<0.330	=	mo/ko	022 0>	=	04/00	022 0/	=	1,00	022.07	=	-46-
Hexachlorocyclopentadiene	<0.330) =		<0.330	>=	ma/ka	055.05	> =	94/0E	220	> =	mg/kg	0220	> =	mg/kg
Hexachloroethane	<0.330	=		0 330	=	24/5m	055.0	> =	24/5E	0220	> =	113/ Kg	70.330	> :	mg/kg
Indeno(1,2,3-cd)pyrene	<0.330) >		<0.330) =	mg/kg	\$0.55 \$30	> =	119/Kg	0520	> =	mg/kg	40.35U	> :	mg/kg
Isophorone	<0.330	-		<0.330) =	mg/kg	<0.330		mg/kg	<0.330 \$30	> =	mo/kg	055.05	> =	mg/kg
N-Nitroso-di-n-propylamine	<0.330	>		<0.330	>	mg/kg	<0.330) >	mg/kg	<0.330	> =	ma/ka	<0.330	> =	ma/kg
N-Nitrosodiphenylamine	<0.330	Þ		<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	· ¬	mg/kg	<0.330) =	mg/kg
Naphthalene	<0.330	> :		<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Nitropenzene	<0.330	> :		<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
Pentachiorophenol	60.825 6.725	> :		<0.825	> :	mg/kg	<0.825	-	mg/kg	<0.825	>	mg/kg	<0.825	-	mg/kg
	40.550 6.750	> :		<0.350 0.350	- :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Priend	40.330 40.330	> :		<0.330 6.330	> :	mg/kg	<0.330	-	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg
his (2-th) stoothous mathema	<0.330 220	> :		<0.330 6.330	- :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
his (2-th) prostby) bether	0.330	> :		<0.330 6 220	> :	mg/kg	<0.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
bis(2-thloroisopport) otho	0.330	> :		<0.330 6.330	> :	mg/kg	<0.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
bis(2-Ethylboxyl)abthalato	0.330	> :		<0.330 6.330	> :	mg/kg	<0.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
1 1 1-Trichloroethane		> =		40.35U	> :	mg/kg	<0.350	> :	mg/kg	<0.330	> :	mg/kg	<0.330	>	mg/kg
1.1.2.2-Tetrachloroethane) ₍ C	> =		۶. د	> =	ug/kg	ۍ ر	> :	U9/kg	٥,4	> :	ug/kg	Ωŕ	⊃:	ug/kg
1.1.2-Trichloroethane	Ϋ́	=	04/60	'nζ	=	24/67))	64/80 (4/80)	, 4	> :	ug/kg) ·	ɔ :	ng/kg
1,1-Dichloroethane	Ŷ	,		ς. (γ	> =	19/kg) 1 0	> =	09/kg	ۍ بر	> =	U9/K9	٥ ۲	> :	ug/kg
1,1-Dichloroethene	ئ	>		\$	- =	ua/ka	, ₁ 2	· =	16/kg	ۍ ر د	> =	84/61 64/61) (> =	ug/kg
1,2-Dichloroethane	Ŷ	_		\$	=	ua/ka	, t	-	10/Va	, Æ	> =	64/65	,	> =	09/kg
1,2-Dichloropropane	ئ	_		ŵ	· >	ug/ka	. .	· =	10/kg) ₁ C	> =	24/80 24/01) (> =	09/kg
2-Butanone	5.6	7		8.5	-	110/140	0 7	, -	04/07	7.0) =	84/85 64/65	, ,)	64/6n
2-Chloroethylvinyl ether	10	· =		10 10	• =	ua/ka	10	· =	04/00	100	> =	09/kg	35	> =	ug/kg
2-Hexanone	<50	=		5 0	=	64/61	20) =	04/07	2 4) :	5 / S	2 5	ɔ :	ug/kg
4-Methyl-2-Dentanone	5 5	=			> =	B 4 / B 7	0,4	ɔ :	09/kg	00.5	> :	ug/kg	00,	-	ug/kg
Acetone	35) a		120	ء د	ug/kg	100	- '	ug/kg	0\$°	- !	ug/kg	\$	>	ug/kg
Renzene	<u>5</u> 4	o =		<u>.</u>	: م	Ug/kg	<u>.</u>	ກ :	ug/kg	4.4	8	ug/kg	9.2 _	8	ug/kg
Bromoform	ۍ د	> =		ۍ	> =	ug/kg	٠ ۲	> :	ug/kg	ŵή	> :	ug/kg	۸,	-	ug/kg
	,	כ	64 /6n	?	>	US/ KS	Ç	>	ug/kg	≎	>	ug/kg	ψ.	>	ug/kg

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	Well/Boring: Sample ID: Depth:	S 4 2	SB-039 A1046 2 - 2.5		N Y	SB-039 A1047 - 7.5		N 4.1	SB-039 A1048 1.5 - 12		s A 21	SB-039 A1049 5 - 15.5		S A S	SB-040 A1050	
Parameters		Result	9. 8.	Units	Resul t	OFR	Units	Result	Q R	Units	Result	QFR R	Units	Result	o FR	Units
•																
Bromomethane		1 0	>	ug/kg	1 0	=	ua/ka	~10	=	04/60	د10	=	64/61	,	Ξ	-4/
Carbon Disulfide		ŵ	⊃	ug/kg	.	=	ua/ka	, t	=	24/57 54/57	; ; ;	> =	84/8n	2 4	> :	09/Kg
Carbon Tetrachloride		\$	=	no/ka	څ.	=	64/65 04/61	, K	> =	64/65 64/65	, 4	> =	9 / KD	,	> :	ug/kg
Chlorobenzene		ŕ	=	64/61	·Κ) =	n - 1) ų	:	6 . 60	، ر	ɔ :	ug/kg	ς,	>	ug/kg
Chlorodibromomethane		,	> =	D () () ()	ب ر	> :	ug/kg	۰ ی	> :	ug/kg	€.	>	ug/kg	\$	>	ug/kg
Chlorosthono) {	> :	9/kg	ς:	-	ug/kg	Ç.	>	ug/kg	Ŷ.	>	ug/kg	Ŷ	>	ua/ka
			> :	ug/kg	ور آ	>	ug/kg	1 9	>	ug/kg	1 0	>	ug/kg	^10	>	ua/ka
		Ç,	-	ug/kg	Ç,	>	ug/kg	÷,	>	ug/kg	Ą	>	Ua/ka	₽	=	ua/ka
Chloromethane		ر اہ	>	ug/kg	1 0	>	ug/kg	1 0	>	ug/kg	1 0	_	ua/ka	~10	=	10/kg
Dichioropromomethane		φ,	>	ug/kg	₽,	<u> </u>	ug/kg	ئ	>	ug/kg	Ŷ	· >	ug/ka	\$	- =	ug/ka
E inyl Denzene		≎.	>	ug/kg	₽	>	ug/kg	څ.	>	ug/kg	څ	_	ua/ka	ۍ. م	=	10/kg
Metnylene unloride		0.	-	ug/kg	3.0	7	ug/kg	1.4	-	ua/ka	~10	=	110/kg	٠, -	, –	04/01
Styrene		ψ,	>	ug/kg	ئ	_	ug/kg	ئ	-	ug/ka	ŝ	=	uo/ka	; . ¢	> =	54/51
Tetrachloroethene		φ,	-	ug/kg	Ŷ	>	ug/kg	\$	>	ug/kg	ŵ	· >	ua/ka	, t	=	gy/gn
Totale		. ڻ	-	ug/kg	φ,	>	ug/kg	ۍ	>	ug/kg	ŵ	_	ua/ka	, 1 2	=	ua/ka
irichioroethene		≎ :	>	ug/kg	ئ	>	ug/kg	ئ	>	ug/kg	ŵ	-	ua/ka	ۍ,	=	10/kg
Vinyl Acetate		\$	>	ug/kg	~10	-	ug/kg	~10	>	ug/ka	~10	=	uo/ka	~10) =	04/01
Vinyl Chloride		<10 -	>	ug/kg	10	-	ug/kg	1 0	_	ug/ka	10	=	ua/ka	100	=	64/65
Xylenes (total)		ئ	>	ug/kg	ŵ	_	Ua/ka	ۍ.	=	10/kg	, r	=	04/07	? ų	> =	64/6n
cis 1,3 Dichloropropene	يو	\$	=	Ma/ka	ς,	=	04/01	۰ بر) =	D 1/0:	, ų)	64 /6n	,	ɔ :	ug/kg
cis-1.2-Dichloroethene		, r 2	=	84/C1	, () =	D () () ()	۶ ५	> :	ug/kg	ייט	> :	ug/kg	٠,	>	ug/kg
tranc 1 Z.Dichlosoppop	9	,	:	64 /65 65	,	:	ug/kg	۲,	>	ug/kg	₽	>	ug/kg	ئ	>	ug/kg
	בו וב	,	> :	ug/kg	, ئ	>	ug/kg	ۍ	>	ug/kg	ŵ	>	ug/kg	ئ	⊃	ua/ka
rians-1,2-Dichloroethene	e e	Ç	>	ug/kg	Ŷ	>	ug/kg	₽	>	ug/kg	ŵ	>	ug/kg	ک	=	ug/ka
													,		ı	

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Well/Boring: Sample ID: Depth:	847	SB-040 A1051 7 - 7.5		s 10.	SB-040 A1052 10.5 - 11		N 4 25	SB-040 A1053 I5 - 16		S A 15	SB-040 A1054 15 - 16		SE A1	SB-041 A1058 2 - 2.5	
Parameters	Resul t	QFR	Units	Result	of R	Units	Result	OFR	Units	Result	OFR	Units	Result	OFR	Units
Aluminum	8700	2	mg/kg	0006	2	ma/ka	0100	2	24/00	שלטט	3	ma // cm	13000	=	16.0
Arsenic - Graphite Furnace	1	z	mg/kg	9.	: z	mg/kg	5.0	: 2	mg/kg	60.87	. 3	mg/kg	3.1	E	mg/kg mg/ka
Barilin	580	z	mg/kg	150	z	mg/kg	190	z	mg/kg	530	Z	mg/kg	210	2	mg/kg
	• è		mg/kg	ر. د. د		mg/kg	٠. د		mg/kg	1.6		mg/kg	0.92		mg/kg
Chromica	10.7		mg/kg	7.7		mg/kg	0.45 13		mg/kg	0.10 13		mg/kg	0.57		mg/kg
Chromium VI	<0.50	-	mg/kg	<0.50	>	mg/kg	6.50	-	mg/kg	-6.50 -0.50	>	mg/kg mg/ka	<0.10	=	mg/kg mg/kg
Copper	11	:	mg/kg	8.0	;	mg/kg	8.0		mg/kg	8.4		mg/kg	8.2	z	mg/kg
Losd - Graphite Furnace	12000	2 :	mg/kg	0,400	2:	mg/kg	11000	Z	mg/kg	10000	z	mg/kg	12000	z	mg/kg
Mercury	60 022	z :	mg/kg mg/kg	4.0	z :	mg/kg	8.9	Z:	mg/kg	8.8 9.8	2:	mg/kg	=	z	mg/kg
Since	290.05 28	>	mg/kg	30.05	>	mg/kg	<0.02	>	mg/kg	<0.020 	>	mg/kg	<0.024	>	mg/kg
Silver	9		mg/kg mg/kg	7 9		mg/kg	7,		mg/kg	13		mg/kg	10		mg/kg
Zinc	18.		mg/kg	19.50		mg/kg mg/kg	0.32 16		mg/kg mg/kg	0.14 15.14		mg/kg	0.57		mg/kg
1,2,4-Trichlorobenzene	<0.330	>	mg/kg	<0.330	5	mg/kg	<0.330	n	mg/kg	<0.330	⊐	mg/kg	<0.330	=	119/Kg
1,2-Dichlorobenzene	<0.330)	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg	<0.330	· >	mg/kg	<0.330))	ma/ka
1,3-Uichlorobenzene	<0.330	> :	mg/kg	<0.330	- :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
7,4-Dichichlocophocal	0.550	> :	mg/kg	<0.350	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
2 / A. Trichlorophonol	0220	> :	mg/kg	<0.825 6.72 6.72 6.73	> :	mg/kg	<0.825	-	mg/kg	<0.825	>	mg/kg	<0.825	_	mg/kg
2.4-Dichlorophenol	330	> =	mg/kg		> =	mg/kg	<0.330	> :	mg/kg	<0.330	> :	mg/kg	<0.330	- :	mg/kg
2.4-Dimethylphenol	<0.330	· =	104/cm		> =	94/98	0520	> =	IIIG/RG	0.220	> :	mg/kg	<0.330 6.730)	mg/kg
2,4-Dinitrophenol	<0.825	· >	mg/kg	<0.825	· =	18/78 10/kg	40.336 40.825	> =	19/Kg	<0.330 <0.825	> =	mg/kg	<0.550 <0.956	- :	mg/kg
2,4-Dinitrotoluene	<0.330	_	mg/kg		· -	ma/ka	<0.330	- =	ma/kg	330	> =	94/50	720.07	> =	mg/kg
2,6-Dinitrotoluene	<0.330	=	ma/ka		=	ma/ka	<0.330	=	24/00	022.07) =	D 4 / D 11	0220	> :	13/Kg
2-Chloronaphthalene	<0.330	· >	mg/kg		· =	ma/kg	<0.330) =	ma/kg	0.330	> =	mg/kg	2000	> =	mg/kg
2-Chlorophenol	<0.330	>	mg/kg		>	mg/kg	<0.330	· >	mg/kg	<0.330	- =	ma/ka	055.0>) =	24/5E
2-Methylnaphthalene	<0.330	>	mg/kg		>	mg/kg	<0.330	_	ma/ka	<0.330	- =	ma/ka	<0.330	> =	24/25
Z-Methylphenol	<0.330	> :	mg/kg		_	mg/kg	<0.330	>	mg/kg	<0.330	· ¬	mg/kg	<0.330	· >	ma/ka
Z-Nitroani(ine 2-vitroakoo)	<0.825	> :	mg/kg	<0.825)	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg	<0.825	_	mg/kg
	۰۵.330	5	mg/kg		>	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg

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Well/Boring:	IS	SB-040			8-040			SB-040			3B-040		S	8-041	
Sample 10: Depth:	× <u>~</u>	A1051		10.	A1052 10.5 - 11		72	A1053 15 - 16		- 55	A1054 15 - 16		4 2	A1058 2 - 2.5	
Parameters	Result	QFR	Units	Result	OFR	Units	Result	OFR	Units	Result	OFR	Units	Result	QFR.	Units
3 31-Dichlocobenzidine	022 0>	=	100	022 07	=	1	077.07	=		0.5	:				
Z. Mitchoonilino		> :	5 / F	•	o :	mg/kg	40.330	-	mg/kg	<0.35U	>	mg/kg	<0.330	>	mg/kg
	620.00	ɔ :	ш9/кg ∵		> :	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg
4,0-Uinitro-2-metnyiphenoi	<0.825	>	mg/kg		>	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg	<0.825	>	ma/ka
4-Bromophenyl-phenylether	<0.330	>	mg/kg		>	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg	<0.330	· >	ma/ka
4-Chloro-3-methylphenol	<0.330	>	mg/kg		>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	· -	ma/ka
4-Chloroaniline	<0.330	-	mg/kg	•	>	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg	<0.330) >	ma/ka
4-Chlorophenyl-phenylether	<0.330	>	mg/kg		>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	· >	mg/kg
4-Methylphenol	<0.330	>	mg/kg		>	mg/kg	<0.330	-	mg/kg	<0.330	>	mq/kg	<0.330	_	ma/ka
4-Nitroaniline	<0.825	>	mg/kg	•	>	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg	<0.825	· >	mg/kg
4-Nitrophenol	<0.825	> :	mg/kg		>	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg	<0.825	_	mg/kg
Acenaphthene	<0.330	>	mg/kg		>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	-	ma/ka
Acenaphthylene	<0.330	> :	mg/kg		>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Anthracene	<0.330	> :	mg/kg		>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
Benzo(a)anturacene	<0.330	> :	mg/kg		>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg
Benzo(a)pyrene	<0.330	> :	mg/kg	•	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Benzo(b) fluoranthene	<0.330	- :	mg/kg		>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Benzo(g,n,1)perylene	<0.330	ɔ :	mg/kg		- :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
Benzo(K)Tluorantnene	<0.330	> :	mg/kg		> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg
Benzolc Acid	<0.330 230	> :	mg/kg	•	> :	mg/kg	<0.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Butvibenzvichthalate	0.230	> =	mg/kg mg/kg	0.050	> :	mg/kg	<0.330	> :	mg/kg	<0.330	> :	mg/kg	<0.330	>	mg/kg
Chrysopa	0.55	> :	D 1/2	•	o :	IIIg/ Kg	00.00	> :	mg/kg	<0.33U	-	mg/kg	<0.330	>	mg/kg
Di-n-hitylphthalate	0.550	> =	mg/kg mg/kg	•	> :	gy/g	<0.330 6.330	> :	mg/kg	<0.330	> :	mg/kg	<0.330	>	mg/kg
Distribution of	0.00	> :	114/Kg	•	> :	mg/kg	<0.350 	-	mg/kg	<0.350	>	mg/kg	<0.330	>	mg/kg
Dibarot Prominatale	×0.330	> :	mg/kg	<0.330 0.230	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg
Dibenzo(a,n)anthracene	<0.330	> :	mg/kg		> :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Dibenzoruran Bisahalahalah	055.05	> :	mg/kg	<0.350	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Uletnylphthalate	<0.330	> :	mg/kg		>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Umetnylphthalate	<0.330 0.530	-	mg/kg		>	mg/kg	<0.330	-	mg/kg	<0.330	-	mg/kg	<0.330	>	ma/ka
Fluoranthene	<0.330	> :	mg/kg	<0.330	> :	mg/kg	<0.330	-	mg/kg	<0.330	-	mg/kg	<0.330	-	mg/kg
ruorene	<0.330	- :	mg/kg		> :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
nexacntoropenzene	VO.330	>	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg

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QFR = Qualifier
Analytical data has not been validated.

	Well/Boring: Sample ID: Depth:	SE A1	SB-040 A1051 7 - 7.5		s 40.	SB-040 A1052 10.5 - 11		2 E	SB-040 A1053 15 - 16		s A 15	SB-040 A1054 15 - 16		SE A1	SB-041 A1058 2 - 2.5	
Parameters		Resul t	QFR	Units	Result	OFR	Units	Result	OFR	Units	Resul t	OFR	Units	Result	OFR	Units
Hexachlorobutadiene Hexachlorocyclopentadiene Hexachlorocyclopentadiene Hexachlorocthane Indeno(1,2,3-cd)pyrene Isophorone N-Nitroso-di-n-propylamine N-Nitroso-diphenylamine Naphthalene Nitrobenzene Pentachlorophenol Phenol Phenol Phenol Phenol Phenol Phenol Phenol Phenol Phenol I,2-Chloroethane I,1,2-Chloroethane I,1,2-Trichloroethane I,1,2-Trichloroethane I,1,2-Trichloroethane I,1-Dichloroethane I,1-Dichloroethane I,2-Dichloroethane H,1-Dichloroethane I,2-Dichloroethane H,1-Dichloroethane I,2-Dichloroethane H,1-Dichloroethane H,1-Dichloroethane I,2-Dichloroethane H,1-Dichloroethane I,2-Dichloroethane I,3-Dichloroethane I,3-Dichlor	\$	6 .330 6		99/kg 99/kg 19	66.336 66.338 66		mg/kg mg/kg mg/kg mg/kg mg/kg ng/kg ng/kg ng/kg ng/kg ng/kg ng/kg ng/kg ng/kg ng/kg ng/kg ng/kg	\$5.22 \$5.22		89/kg 89/kg 89/kg 89/kg 89/kg 89/kg 89/kg 89/kg 89/kg 89/kg 89/kg 89/kg 89/kg 89/kg 89/kg 89/kg 89/kg 89/kg 89/kg 89/kg	6.000000000000000000000000000000000000	222222222222222222222222222222222222222	### ### ### ### ### ### ### ### ### ##	66.330 66.300 66		mg/kg mg/kg

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that specific analysis
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QFR = Qualifier
Analytical data has not been validated.

	Well/Boring: Sample ID: Depth:	N K	SB-040 A1051 7 - 7.5		s A 10.	SB-040 A1052 10.5 - 11		2.25	SB-040 A1053 15 - 16		S A A 15	SB-040 A1054 I5 - 16		SE A18	SB-041 A1058	
Parameters		Resul t	QFR	Units	Result	OFR	Units	Result	OFR	Units	Result	OFR	Units	Resul t	OFR R	Units
Bromomethane		1 0	-	uq/ka	~10	=	ua/ka	<10	=	110/kg	410	=	04/51	710	=	24/51
Carbon Disulfide		٠	-	ug/kg	ئ	-	ug/ka	.	-	ua/ka	\$	· =	19/kg	÷.	> =	94/67
Carbon Tetrachloride		ŵ	>	ug/kg	ئ	>	ug/kg	څ.	_	ug/kg	ιĈ		ua/ka	, . Ĉ	=	ug/ko
Chlorobenzene		ۍ	>	ug/kg	څ.	>	ug/kg	٠	>	ug/kg	ŵ	· ¬	ua/ka	, r \$	· =	ua/ka
Chlorodibromomethane		ۍ پ	⊃	ug/kg	ئ	>	ug/kg	ئ	-	ug/kg	ô	_	ug/ka	÷	· =	ua/ka
Chloroethane		, 10	> :	ug/kg	~ 10	>	ug/kg	1 0	-	ug/kg	1 0	_	ug/kg	<10	· >	ug/kg
Chlorotorm		ô,	> :	ug/kg	ŵ,	>	ug/kg	ئ	>	ug/kg	۰Ĉ	-	ug/kg	ۍ	_	ug/kg
Chloromethane		٠ <u>٠</u>	> :	ug/kg	~ 10	>	ug/kg	~10	>	ug/kg	5	>	ug/kg	1 0	-	ug/kg
Dichlorobromomethane		φ,	> :	ug/kg	ئ	>	ug/kg	ŵ	_	ug/kg	٠	>	ug/kg	ŵ	_	ug/kg
Ethylpenzene		o;	> :	ug/kg	ۍ ن	>	ug/kg	Ŷ	>	ug/kg	ئ	>	ug/kg	ئ	_	ug/kg
Metnylene Chloride		ر د ا	> :	ug/kg	~1 0	-	ug/kg	1.3	7	ug/kg	^10	>	ug/kg	1 0	>	ug/kg
Styrene Totalelle		۰.	> :	ug/kg	ئ	>	ug/kg	. ≎	>	ug/kg	Ą	>	ug/kg	\$	>	ug/kg
tetrachtoroethene		ئ ئ	> :	ug/kg	φ,	> :	ug/kg	ι≎.	>	ug/kg	ŵ	>	ug/kg	ئ	_	ug/kg
Tricklesset		ۍ بر	> :	ug/kg	٥,	- :	ug/kg	φ,	⊃	ug/kg	₽	>	ug/kg	ŵ	-	ug/kg
View Accepte		Ç ş	> :	ug/kg	Ç;	-	ug/kg	ۍ ب	>	ug/kg	\$	>	ug/kg	ۍ	-	ug/kg
Vinyl Acetate		2:	-	ug/kg	~1 0	>	ug/kg	1 0	>	ug/kg	1 0	>	ug/kg	1 0	⊃	ua/ka
Vinyl Chloride		~1 0	>	ug/kg	^ 10	>	ug/kg	1 0	>	ug/kg	^10	>	ug/kg	<10	_	ug/kg
jes,		ئ	>	ug/kg	ئ	>	ug/kg	ô	>	ug/kg	Ą	-	ug/kg	څ.	_	ua/ka
_ ,	je Je	Α.	-	ug/kg	\$	_	ug/kg	Ą	-	ug/kg	ŵ	Þ	ua/ka	ŵ	=	ua/ka
cis-1,2-Dichloroethene	ų.	φ.	-	ug/kg	ک	-	ug/kg	Ą	⊃	Uq/kg	\$	7	ua/ka	ź.	=	04/60
	bene	ئ	>	ug/kg	ئ	-	ug/kg	ۍ	_	ug/kg	ŵ		ua/ka	, (\$) =	10/kg
trans-1,2-Dichloroethene	ene	٨	>	ug/kg	\$	_	ug/kg	ŵ	· >	ug/kg	ŵ)	ua/ka	, ŵ	=	10/kg
							,			,				•	,	0 (0)

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Analytical data has not been validated.

Parameters Aluminum Areanic - Graphite Furnace	Depth: 7	7 - 7.5		12.5	A1060 .5 - 13.5	15	, 1	A1001 16 - 16.5	
	Result	OFR	Units	Result	QFR R	Units	Result	QFR	Units
	8400	z	mg/kg	5800	2	ma/ka	9700	2	ma/ka
	5.4		mg/kg	1.2		ma/ka	3.0	:	94/6m
Barium	210	2	mg/kg	330	2	ma/ka	030	2	104/2m
Beryllium	98.0		ma/ka	0.50	:	104/cm	200	E	9 / SE
Cadmium	1.5		mo/ka	85.0		84/8m	56		13/Kg
Chromium	2		84/6E) «		10/10 E	2.4		mg/kg
Chromium VI	<0.50	=	0 4/0E	2.0	=	13/Kg	<u>.</u>	=	mg/kg
Copper	7.8) a	24/SE) 8	5 2	BA/KB	0.50	ɔ :	mg/kg
Lon	14000	: 2	8 4 / D		2:	mg/kg	٠.×	Z	mg/kg
lead - Graphite Eurnace	000	2 3	mg/kg	000	z :	mg/kg	16000	æ	mg/kg
More and an area of the second and area of the second area of the second and area of the second area of the second and area of the second and area of the second		Z :	mg/kg	5.1	z	mg/kg	9	z	mg/kg
Nickal y	,20.05	>	mg/kg	<0.021	>	mg/kg	<0.020	>	mg/kg
מיייים מייים מיים מייים	<u>.</u>		mg/kg	8.6		mg/kg	5		mg/kg
19A110	14.0		mg/kg	0.33		mg/kg	0.67		ma/ka
2.1nc	17		mg/kg	15		mg/kg	18		ma/ka
1,2,4-IFICHIOFODENZENE	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	-	ma/ka
1, Z-Uichlorobenzene	<0.330	>	mg/kg	<0.330	¬	mg/kg	<0.330	_	mg/kg
1,3-Dichlorobenzene	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	=	ma/ka
1,4-Dichlorobenzene	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330) =	ma/ka
Z,4,5-Irichlorophenol	<0.825	>	mg/kg	<0.825	>	mg/kg	<0.825	_	mo/ko
Z,4,6-Irichlorophenol	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	· =	mo/ko
2,4-Dichlorophenol	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	=	ma/ka
2,4-Dimethylphenol	<0.330	>	mg/kg	<0.330	-	ma/ka	<0.330	· =	ma/ka
2,4-Dinitrophenol	<0.825	>	mg/kg	<0.825	· >	ma/ka	<0.825	· =	
2,4-Dinitrotoluene	<0.330	-	mg/kg	<0.330	_	ma/ka	<0.330	=	04/pm
2,6-Dinitrotoluene	<0.330	>	mg/kg	<0.330	=	ma/ka	<0.330	=	24/5
2-Chloronaphthalene	<0.330	-	ma/ka	<0.330	=	mo/ka	022.0>	=	94/5m
2-Chlorophenol	<0.330	=	mo/ka	022 0>	· =	84/5E	0000	-	113/Kg
2-Methylnaphthalene	022 0>	=	64/5m	220) :	D 1	0.00)	mg/kg
2-Methylphenol	220	> =	D 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0,00	ɔ :	mg/kg	05.05	>	mg/kg
2-Nitroppilips	0.000	> :	mg/kg	<0.330	-	mg/kg	<0.330	-	mg/kg
	¢0.825)	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg
ל-מורוסופוסו	<0.330	-	mg/kg	<0.330	-	mg/kg	<0.330	כ	ma/ka

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Analytical data has not been validated.

Well/Boring: Sample 1D: Depth:	N A V	SB-041 A1059 7 - 7.5		s A 12.5	SB-041 A1060 12.5 - 13.5		s 16	SB-041 A1061 16 - 16.5	
Parameters	Result	QFR	Units	Result	QFR	Units	Resul t	QFR	Units
3,3'-Dichlorobenzidine	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	=	ma/ka
3-Nitroaniline	<0.825	>	mg/kg	<0.825	_	mg/kg	<0.825	=	ma/ka
4,6-Dinitro-2-methylphenol	<0.825	>	mg/kg	<0.825	-	mg/kg	<0.825	- =	ma/ka
4-Bromophenyl-phenylether	<0.330	>	mg/kg	<0.330	-	ma/ka	<0.330	=	ma/ka
4-Chloro-3-methylphenol	<0.330	>	mg/kg	<0.330	>	mq/kg	<0.330	- =	ma/ka
4-Chloroaniline	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	· >	mg/kg
4-Chlorophenyl-phenylether	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg
4-Methylphenol	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
4-Nitroanitine	<0.825	>	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg
4-Nitrophenol	<0.825	-	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg
Acenaphthene	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Acenaphthylene	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Anthracene	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Benzo(a)anthracene	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Benzo(a)pyrene	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	⊃	mg/kg
Benzo(b)†luoranthene	<0.330	⊃	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Benzo(g, n, 1)perylene	<0.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
Benzo(K)† (uoranthene	<0.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Benzoic Acid	<0.330 6.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Benzyl alcohol	<0.350 6.750	- :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg
butyt benzyt prinatare Character	<0.330	> :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg
Curysene A: _ ht.: _hhh=!_t.t.	<0.330	- :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Di-n-Dutylphthalate	<0.350 0.250	-	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg
U1-n-octy(phthalate	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
Dibenzo(a,h)anthracene	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Dibenzofuran	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg
Diethylphthalate	<0.330	>	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg
Dimethylphthalate	<0.330	>	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg
Fluoranthene	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Fluorene	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Hexachlorobenzene	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
									,

Hexachlorobutadiene Hexachlorocyclopentadiene Hexachlorocytlopentadiene Indeno(1 2 3-rd)nyrana	:			!!	12.5 - 13.5		92	0.01	
	Result	OFR	Units	Resul t	8	Units	Result	OFR.	Units
	022 0	=	1,4,-	022 0	:			:	:
	0.220	> :	mg/kg	<0.330	>	mg/kg	<0.350	>	mg/kg
and J.	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	:0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	>	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg
mine	0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
phenylamine	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
henot	<0.825	-	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg
threne	0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
ane	0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
alate	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg
	5	-	ug/kg	ئ	-	ug/kg	\$	>	ug/kg
hane	S)	-	ug/kg	ۍ.	>	ug/kg	څ	-	ug/kg
ane	so i	-	ug/kg	ۍ.	>	ug/kg	ŵ	_	ug/kg
	ın:	-	ug/kg	ŵ	_	ug/kg	\$	_	ug/kg
	S.	-	ug/kg	Ŷ	>	ug/kg	څ	>	ug/kg
	.	-	ug/kg	ئ	>	ug/kg	ئ	>	ug/kg
opropane	2	>	ug/kg	ŵ	>	ug/kg	\$	>	ug/kg
	100	>	ug/kg	4.2	8	ug/kg	~1 00	>	ua/ka
2-Chloroethylvinyl ether	10	>	ug/kg	~10	>	ug/kg	<10	-	ua/ka
	<50	>	ug/kg	<50	>	ug/kg	\$ 0	>	ug/kg
4-Methyl-2-Pentanone <	20	>	ug/kg	<50	>	ug/kg	^ 50	>	ug/ka
Acetone <	100	>	ug/kg	9.6	8	ug/kg	=	8	ua/ka
Benzene <	2	>	ug/kg	ŵ	>	ug/ka	\$	=	ua/ka
Bromoform <	2	>	ug/kg	\$	-	ua/ka	÷	=	ua/ka

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	Well/Boring: Sample ID: Depth:	8 4 7	SB-041 A1059		s A 12.5	SB-041 A1060 5 - 13.5		88 A1 - 61	SB-041 A1061 16 - 16.5	
Parameters		Result	o R	Units	Resul t	QFR	Units	Result	OFR	Units
Bromomethane		647	=	17		:				
Carbon Dienlfide		2 4	> :	ug/kg	€,	> :	ug/kg	1 9	>	ug/kg
Carbon Tetrachlorida		<i>ې</i> ر	> :	ug/kg	۰ ۍ	-	ug/kg	ئ	>	ug/kg
במו אסנו ובנו מכוונסו ומב		٠٠	>	ng/kg	Ç	>	ug/kg	ô	-	ug/ka
		.	>	ug/kg	ŵ	>	ug/kg	څ.	_	ua/ka
Chlorodibromomethane		ۍ غ	>	ug/kg	ŵ	>	ug/kg	څ.	_	ua/ka
chioroethane		0 •10	>	ug/kg	~10	¬	ua/ka	<10	=	110/kg
Chlorotorm		٠	>	ug/kg	څ.	=	ua/ka	\$) =	04/01
Chloromethane		~10	>	ug/kg	~10	=	ua/ka	, 5	> =	D 4 / 6 :
Dichlorobromomethane		\$	=	na/ka	, ,	=	27/07	? ų	> =	US/Kg
Ethylbenzene		ŕ	=	64/67	, r) :	64 \S	? !	> :	ug/kg
Methylene Chloride		75	> :	19/ Kg	9	> :	ug/kg	≎.	>	ug/kg
Ctyrene Chronical Ide		2 4	> :	ug/kg	₽,	>	ug/kg		8	ug/kg
Totale Control		۰٥٠	-	ug/kg	ۍ	>	ug/kg	ŵ	>	Ua/ka
Teliachioroethene		Φ,	-	ug/kg	ئ	_	ug/kg	ئ	>	ua/ka
		، ئ	>	ug/kg	گ	>	ug/kg	ۍ	-	ua/ka
irichtoroethene		٠	>	ug/kg	\$	-	ug/kg	\$	=	10/40
		~ 10	>	ug/kg	1 0	-	ug/kg	~10	=	10/kg
		ر	>	ug/kg	^10	>	ug/ka	~10	=	19/kg
Sec		ŵ	>	ug/kg	\$	=	na/ka	, rč	-	67/61 64/61
cis 1.3 Dichloropropene	9	ŕ	=	7/0	· ų) :	n	, i	:	SY/SO
1 2-Dichloroet) (> =	9/ kg	۶ ر	> :	ug/kg	۰ ۍ	>	ug/kg
7 7 Dicheloco		, د)	ug/kg	Ç	>	ug/kg	Ŷ	>	ug/kg
tians 1,3-Dichloroprop	ene	٠,	>	ug/kg	گ	>	ug/kg	'n	>	ug/ka
trans-1, c-Dichloroethe	ine ine	Ç	>	ug/kg	ئ	_	ua/ka	'n	=	10//01
				,				•	•	B ()B

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ANALYTICAL RESULTS QUALITY CONTROL - SOIL

رمز	Units		%rec	200%	2 6	ر ا	%rec	%rec	%rec	%rec	%rec	%rec	25.00	אל אל ה	2	2 - 4 2 - 4 2 - 4 3 - 5 3 - 5) e :	%rec	%rec	%rec		%rec		%rec	%rec			%rec	%rec	į	0,000	%rec	%rec	%rec	%	اة ا
SB-041 A1060-MSD 12.5 - 13.5	a R																																			
A10	Result		200	5	- 0	<u>}</u>	87	٤	91	104	112	295	32	102	5	2 2	òć	8	87	8		22		7	85	!		69	29	;	9	62	20	ò	Č	3
" rvi	Units		%rec	Zrec	2 6	ر ا	%rec	%rec	%rec	%rec	%rec	%rec	%rec	%rec	%rec	200	ر ا ا	%rec	%rec	%rec		%rec	%rec		%rec			%rec	%rec	%rec	2 2 2) 		%	18 % 20 C	ē
SB-041 A1060-MS 12.5 - 13.5	QFR																																			
A. 12.5	Result		672	8	5	-) c	8	88	8	100	8	335	105	106	06	87	S è	đ	3	93		3	22		87			72	2	69	72	5		8	3	;
	Units		%rec	Xrec	%rec	2	Arec 2	%rec	%rec	%rec	%rec	%rec	%rec	%rec	%rec	Zrec		yrec .:	%rec	%rec	%rec			%rec	%rec	%rec	%rec				2rec	7,50	2 6	•	Xrec	;
SB-039 A1047-MSD 7 - 7.5	QFR.																																			
8 A10 7	Result		1090	7.44	0	à	38	\ 0	25	%	23	833	0	104	87	87	78	3 6	S :	<i>1</i> 9	2		i	2	82	2	63				2	3	112	!	88	i
60	Units		%rec	%rec	%rec	4.00	שנים פיים פיים	y Lec	Xrec	%rec	%rec	%rec	%rec	Xrec	%rec	%rec	7007	2 2	y Lec	Xrec X	%rec		;	%rec	Xrec	%rec	%rec				%rec	%rec	Zrec	}	%rec	
SB-039 A1047-MS 7 - 7.5	OFR																																			
	Result	į	1134	23.8	0	24	3 4	88	25	25	26	896	5.4	109	8	86	*	3 8	ŝŧ	08	78		è	3 8	3:	25	2				86	29	121		8	
Well/Boring: Sample ID: Depth:	Parameters		Atuminum	Arsenic - Graphite Furnace	Barium	Berv! { i.m					copper	Iron	Lead - Graphite Furnace	Mercury	Nickel	Silver	Zinc	1 2 4-Trichlorobenzene	1 / Dish cochomon	1,4-Dichiolobenzene	C, 4, 0 - I KIBKUMUPHENUL	2,4,6-Tribromophenol	Z,4-Dinitrophenol	2.4-Difficrotuene	z-cntorophenot	Z-FLUOROBIPHENYL	Z-FLUOROPHENOL	Z-Fluorobiphenyl	Z-r (norophenol	5-Nitroaniline	4-Chloro-3-methylphenol	4-Nitrophenol	Acenaphthene	Acenaphthylene	N-Nitroso-di-n-propylamine	

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Analytical QC results at the PS for SQ Tinker Air Force Base

	Well/Boring: Sample ID: Depth:	A18	SB-039 \1047-MS 7 - 7.5		8 A10 7	SB-039 A1047-MSD 7 - 7.5		A1 12.5	SB-041 A1060-MS 12.5 - 13.5	. 5	A10	SB-041 1060-MSD .5 - 13.5	10
Parameters		Resul t	QFR	Units	Result	QFR	QFR Units	Result		QFR Units	Result QFR Units	QFR	Units
NITROBENZENE-D5 Nitrobenzene-D5 PHENOL-D5 Pentachlorophenol Phenol	·	£ 228		% %%% o o o o	72 25		% %%; a a f f c c c c c c	6 06		% % % % % % % % % % % % % % % % % % %	2 2		%rec %rec
Phenol-D5 Pyrene TERPHENYL-D14		48		* ** De 0	2 % 2		% %% on 2012 on 2012	69 6		%rec %rec %rec	¢ 60 60 60 60 60 60 60 60 60 60 60 60 60 6		%%% %%% %%
ieipienyt Di4 1,1-Dichloroethene 1,2-Dichloroethane-D4 Benzene		90 111 96		% % % 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	% 110 102		%%% %%% % %	80 70 70 70 70 70		%%% %%% %%% %% %% %% %% %% %% %% %% %%	73 87 110		%%% 0 0 0 0 0 0 0 0
Bromofluorobenzene Chlorobenzene Toluene Toluene-D8 Trichloroethene		97 103 103 103 85		**** 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	98 108 110 103 89		%%%%% 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	104 102 108 87		*****	113 113 93		

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ANALYTICAL RESULTS QUALITY CONTROL - WATER

rnace root and the soult root by the soult root	A1055 0 - 0	A1056 0 - 0			A1057	
Aluminum Arsenic - Graphite Furnace Barium Beryl Lium Cadmium Chromium Chromium VI Chromophenol Chromo	Units Result		Units	Result	OFR C	Units
Arsenic - Graphite Furnace Barium Beryl lium Cadmium Chromium VI Copper Led - Graphite Furnace Mercury Nickel Silver 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorophenol 2,4-Trichlorophenol 2,4-Frichlorophenol 2,4-Frichlorophenol 2,4-Dinitroplenol 2,5-Dinitroplenol				6	:	;
Barium Beryllium Cadmium Chromium Chromium VI Copper Led - Graphite Furnace Mercury Nickel Silver 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,3-Dichlorophenol 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol 2,4-Dinitroplenol 2,5-Dinitroplenol 2,5-Dinitroplenol 2-Fluoropiphenol 2-Fluoropiphenol				40.20 010	> =) BE
Beryllium Cadmium Chromium Chromium Chromium Chromium VI Copper Iron Lead - Graphite Furnace Mercury Nickel 1,2,4-Trichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorophenol 2,4,5-Trichlorophenol 2,4-Dimetrylphenol 2,4-Dimetrylphenol 2,4-Dimitrophenol 2,4-Dimitrophenol 2,4-Dimitrophenol 2,4-Dimitrophenol 2,4-Dimitrophenol 2,4-Dimitrophenol 2,4-Dimitrophenol 2,2-Dimitrophenol 2,2-Dimitrophenol 2,2-Dimitrophenol 2,2-Dimitrophenol 2,2-Dimitrophenol 2,2-Dimitrophenol 2-Chlorophenol 2-Chlorophenol 2-Chlorophenol 2-Chlorophenol 2-Chlorophenol 2-Fluorophenol 2-Fluorophenol					> =)
Cadmium Chromium Chromium VI Copper Iron Lead - Graphite Furnace Mercury Nickel 3:1ver 1,2.4-Trichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorophenol 2,4.5-Trichlorophenol 2,4.5-Trichlorophenol 2,4.5-Trichlorophenol 2,4.5-Trichlorophenol 2,4.5-Trichlorophenol 2,4.5-Trichlorophenol 2,4.5-Trichlorophenol 2,4.5-Trichlorophenol 2,4.5-Trichlorophenol 2,4.5-Initrophenol 2,2-Dinitrophenol 2,2-Dinitrophenol 2,2-Dinitrophenol 2,2-Dinitrophenol 2,2-Luorophenol 2-Fluorophenol 2-Fluorophenol 2-Fluorophenol				.0.50 .0.0050	> =	7
Chromium VI Copper Iron Lead - Graphite Furnace Mercury Nickel 3:1ver 1,2,4-Trichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorophenol 2,4,5-Trichlorophenol 2,4-Dimethylphenol 2,4-Dimethylphenol 2,4-Dimitrophenol 2,4-Dimitrophenol 2,4-Dimitrophenol 2,2-Dimitrophenol 2,2-Dimitrophenol 2,2-Dimitrophenol 2,2-Dimitrophenol 2,2-Dimitrophenol 2,2-Dimitrophenol 2,2-Dimitrophenol 2,2-Dimitrophenol 2-Chlorophenol 2-Chlorophenol 2-Chlorophenol 2-Chlorophenol 2-Chlorophenol 2-Chlorophenol 2-Chlorophenol 2-Chlorophenol				<0.0050	, ,	
Copper Lead - Graphite Furnace Mercury Nickel Silver 1,2,4-Trichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorophenol 2,4-Dichlorophenol 2,4-Dimethylphenol 2,4-Dimitrophenol 2,4-Dimitrophenol 2,4-Dimitrophenol 2,4-Dimitrophenol 2,2-Dimitrophenol 2,2-Dimitrophenol 2,2-Dimitrophenol 2,2-Dimitrophenol 2,2-Dimitrophenol 2,2-Dimitrophenol 2,2-Luorophenol 2,2-Luorophenol				<0.010	>	mg/l
Lead - Graphite Furnace Mercury Nickel Silver 1,2.4-Trichlorobenzene 1,2.0 ichlorobenzene 1,4.5 - Trichlorophenol 2,4.5 - Trichlorophenol 2,4.6 - Trichlorophenol 2,4.6 - Trichlorophenol 2,4.5 - Trichlorophenol 2,4.6 - Dinitrophenol 2,4.0 initrophenol 2,5.0 initrophenol				<0.010	- :	J/gm
Lead - Graphite Furnace Mercury Nickel Silver 1,2.4-Trichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene 1,4-Dichlorophenol 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol 2,4-Dinitrophenol 2,4-Dinitrophenol 2,4-Dinitrophenol 2,4-Dinitrophenol 2,2-Dinitrophenol 2,2-Dinitrophenol 2,2-Dinitrophenol 2,2-Dinitrophenol 2,2-Luorophenol 2-Fluorophenol 2-Fluorophenol 2-Fluorophenol 2-Fluorophenol 2-Fluorophenol 2-Fluorophenol				\$0.05 \$0.05	> :)/gm
Mercury Nickel Silver Zinc 1,2,4-Trichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorobenzene 1,4-Dichlorophenol 2,4,6-Trichlorophenol 2,4-Dinitrophenol 2,4-Dinitrophenol 2,4-Dinitrophenol 2,4-Dinitrophenol 2,2-Dinitrophenol 2,2-Dinitrophenol 2,2-Dinitrophenol 2,2-Dinitrophenol 2,2-Dinitrophenol 2,2-Dinitrophenol 2,2-Dinitrophenol 2,2-Dinitrophenol 2,1-Dinitrophenol 2,2-Dinitrophenol 2-Chlorophenol 2-Chlorophenol 2-Fluorophenol 2-Fluorophenol				00.00 00.00 00.00	> =	1/gii
Nickel Silver Zinc 1,2,4-Trichlorobenzene 1,2-Dichlorobenzene 1,4-Dichlorophenol 2,4,5-Trichlorophenol 2,4-Frichlorophenol 2,4-Dinitrophenol 2,4-Dinitrophenol 2,4-Dinitrotoluene 2,6-Dinitrotoluene 3,6-Dinitrotoluene 3,6-Dinitrotoluene 3,6-Dinitrotoluene 3,6-Dinitrotoluene 3,6-Dinitrotoluene 3,6-Dinitrotoluene 3,6-Dinitrotoluene 3,6-Dinitrotoluene				<0.00020) -
Silver Zinc 1,2.4-Trichlorobenzene 1,2-Dichlorobenzene 1,4-Dichloropenzene 1,4-Dichlorophenol 2,4.5-Trichlorophenol 2,4.5-Trichlorophenol 2,4-Dinitrophenol 2,4-Dinitrotoluene 2,6-Dinitrotoluene 2,6-Dinitrotoluene 2,6-Lorophenol 2,5-Lorophenol 2,6-Lorophenol 2,6-Lorophenol 2,6-Lorophenol 2,6-Lorophenol 3,6-Dinitrotoluene				<0.040		1/00
1,2.4 Trichlorobenzene 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 2,4-Dichlorophenol 2,4,6-Trichlorophenol 2,4-Dinitrophenol 2,4-Dinitrophenol 2,4-Dinitrophenol 2,4-Dinitrotoluene 2,6-Dinitrotoluene 2,6-Dinitrotoluene 2,6-Lorophenol 2,1-Dinitrotoluene 2,6-Dinitrotoluene 2,6-Dinitrotoluene 2,6-Dinitrotoluene 2,6-Dinitrotoluene 2,6-Dinitrotoluene 2,6-Dinitrotoluene 2,6-Dinitrotoluene 3,6-Dinitrotoluene 3,6-Dinitrotoluene 3,6-Dinitrotoluene 3,6-Dinitrotoluene 3,6-Dinitrotoluene 3,6-Dinitrotoluene				<0.010	_	ag/g
1,2,0 ich lorobenzene 1,3-Dich lorobenzene 1,4-Dich lorobenzene 1,4-Dich lorobenzene 2,4,5-Trich lorophenol 2,4-Dich lorophenol 2,4-Dimitrophenol 2,4-Dimitrophenol 2,4-Dimitrotoluene 2,6-Dinitrotoluene 2,6-Dinitrotoluene 2-Chlorophthalene 2-Chlorophenol 2-Fluorobiphenyl				<0.020		J/gm
1,3-Dickloroberzene 1,4-Dickloroberzene 2,4,5-Tricklorophenol 2,4,6-Tricklorophenol 2,4-Dicklorophenol 2,4-Dimethylophenol 2,4-Dimitrophenol 2,4-Dimitrotoluene 2,6-Dimitrotoluene 2,6-Dimitrotoluene 2-Chlorophenol 2-Fluorophenol 2-Fluorophenol				01,		J/gn
1,4-Dichlorobenzene 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol 2,4-Dichlorophenol 2,4-Dichlorophenol 2,4-Dimethylorphenol 2,4-Dimitrophenol 2,4-Dimitrotoluene 2,6-Dimitrotoluene 2,5-Dimitrotoluene 2-Chlorophenol 2-Fluorophenol				25		1/6n
2,4,5-Trichlorophenol 2,4,6-Trichlorophenol 2,4,6-Trichlorophenol 2,4-Dirchlorophenol 2,4-Dirchlorophenol 2,4-Dirchlorophenol 2,4-Diritrophenol 2,4-Diritrotoluene 2,6-Diritrotoluene 2,6-Diritrotoluene 2-Chlorophenol 2-Fluorophenol 2-Fluorophenol				25		1/6n
2,4,6-Tribromophenol 2,4,6-Trichlorophenol 2,4-Dirichlorophenol 2,4-Dimethylphenol 2,4-Dinitrophenol 2,4-Dinitrotoluene 2,6-Dinitrotoluene 2,6-Dinitrotoluene 2-Chlorophenol 2-Fluorophenol				20,5	=	1/65
2,4,0-1richlorophenol 2,4-Dirchlorophenol 2,4-Dimethylphenol 2,4-Dinitrophenol 2,4-Dinitrotoluene 2,6-Dinitrotoluene 2-Chloronaphthalene 2-Chlorophenol 2-Fluorophenol 2-Fluorophenol				8)	%rec
2,4-0 in the phenol 2,4-0 in thy phenol 2,4-0 in trophenol 2,4-0 in trotol uene 2,4-0 in itrotol uene 2,4-0 in itrotol uene 2,6-0 in itrotol uene 2-chlorophenol 2-tluorophenol 2-fluorophenol 2-fluorophenol				~10	_	1/6n
2,4-Dinitrophenol 2,4-Dinitrotoluene 2,6-Dinitrotoluene 2-Chlorophenol 2-Chlorophenol 2-Fluorophenol				1 0	>	ng/f
2,4-Dinitrotoluene 2,6-Dinitrotoluene 2-Chloronaphthalene 2-Chlorophenol 2-Fluorophenol				5. 2.	- :) fbn
2,6-Dinitrotoluene 2-Chloropaphthalene 2-Chlorophenol 2-Fluorobiphenyl 2-Fluorophenol				Ş) S
2-Chloropaphthalene 2-Chlorophenol 2-Fluorobiphenyl 2-Fluorophenol						1/ 6 n
2-Chlorophenol 2-Fluorobiphenyl 2-Fluorophenol				25		1/gn
2-Fluorobiphenyl 2-Fluorophenol				2 9	> :) (Bn
2-Fluorophenol				2010)/gn
_				2.5		או ה הפת
2-Methylnaphthalene				25 25	=	1/01

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Analytical QC results at the PS for WQ Tinker Air Force Base

Well/Boring: Sample ID: Depth:	FIELDOC A1055 0 · 0			FIELDOC A1056 0 - 0			FIELDOC A1057 0 - 0		ı
Parameters	Result OFR	Units	Result	9.7.R	Units	Result	OFR	Units	
2-Nothic phone									ı
2-Metnythmenot						<10	>	1/6n	
2-Nitrophenol						\$\$ \$	> :)/gn	
3,3'-Dichlorobenzidine						25	> =)/6n	
3-Nitroaniline						, , ,	> :	1/6n	
4,6-Dinitro-2-methylphenol						ŝŝ	> =) (B)	
4-Bromophenyl-phenylether						\$	=) (B)	
4-Chloro-3-methylphenol						410	-) /BD	
4-cntoroanttine /-chtoroahomy -ahomy other						^ 10	-)/bn	
4-Methylphenol						~10	_	J/6n	
4-Nitrophilipe						~10	⊃	1/6n	
4-Nitrophenol						, 1 0	-	1/6n	
Acenaphthene						555	ɔ :	J/gn	
Acenaphthylene						2,5	> :	1/gn	
Anthracene						25	> :	1/6n	
Benzo(a)anthracene						25	> =	1/6n	
Benzo(a)pyrene						200	> =) (6)	
Benzo(b)fluoranthene						100	> =	1/60	
Benzo(g,h,1)perylene						10	> =) / b	
Benzo(K)Tluoranthene						1 0) =)/65 1/60	
Benzolc Acid						~10	>	1/6n	
Butylbenzylphthelete						~10	_	J/gn	
Chrysene						~10	>	l/gu	
Di-n-butvlohthalata						1 0	>	ug/l	
Di-n-octvlobthalate						1 0	>	ug/l	
Dibenzo(a.h)anthracene						~10	>	ng/l	
Dibenzofuran						, 10	> :	ng/l	
Diethylphthalate						0,5	> :	l/gu	
Dimethylphthalate						29	> :	ng/l	
						01>	>	1/6n	

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Well/Boring: Sample ID: Depth:	E.	FIELDQC A1055 0 - 0		L	FIELDQC A1056 0 - 0		E	FIELDQC A1057 0 - 0		
Parameters	Resul t	aFR R	Units	Result	o FR	Units	Result	OFR.	Units	
Fluoranthene										İ
Fluorene							0 7 9	- :)/gn	
Hexachlorobenzene							01,	> :	1/6n	
Hexach problitadiana							0. -	>	1/gn	
Hexachionocyclopentadiene							1 0	-	/gn	
Hexach loroethene							~10	>	ug/l	
Indepo(1 2 %-cd)mone							~10	>	ug/l	
Temporone Temporone							~10	>	ug/l	
N-Nitroso-di-n-nrow/paino							~10	⊃	l/gn	
N-Ni+rosodizberylemine							1 0	>	ug/l	
Naphthal and							1 0	>	l/gn	
Nitrobanzana							2	>	l/gu	
Nitrobanzana-na							~ 10	>	l/gu	
Dentechlorophenol							65		%rec	
Phononthropo Dhononthropo							4 25	>	ug/l	
Dhanol							~ 10	>	l/gn	
Dhenol - D.5							1 0	>	1/gn	
Pyrene							9		%rec	
Terphenyl - D14							, 10	>	ا/gu	
bis(2-Chloroethoxv)methane							*		%rec	
bis(2-Chloroethyl)ether							0.5	> :	ng/l	
bis(2-Chloroisopropyl)ethe							01.	- :)/gn	
bis(2-Ethylhexyl)chthalate							200	> :	ng/l	
	Ŕ	Ξ	1,	Ļ	:	,	0L>	>	1/gn	
qua	? ५	> =) (a) (Ůή	> :	1/6n	φ,	>	ug/f	
) (> :	1/6n	ů,	> :	1/6n	₩,	>	l/gu	
) (> =	1/6n	٥ ہ	> :	1/6n	φ,	-	ng/l	
) (> =) (6)	2 4	> :	1/6n	Ç,	> :	1/6n	
	'nζ	> =	- \ B	۶ ۲	> =) (b)	۲ ن	> :	ug/l	
76	108	•	%rec	. K	>	765 766	Ç	>	1/6n %20%	
1,2-Dichloropropane	î,)	1/gn	.₽	>)/bn	ęψ	=	1/0/1	
						;)		

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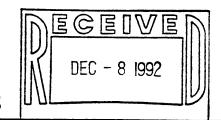
	Units	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n
FIELDQC A1057 0 - 0	QFR L	¬¬¬¬¬¬ ¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬
F. A	Result	<u></u>
	Units	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n
TELDOC A1056 0 - 0	QFR R	¬¬¬¬¬¬ ¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬
E 40	Result	<u>6,5886885858888888888888888888888888888</u>
	Units	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n
FIELDOC A1055 0 - 0	QFR	
	Result	<u>6688688888888888888888888888888888888</u>
Well/Boring: Sample ID: Depth:	Parameters	2-Butanone 2-Chloroethylvinyl ether 2-Hexanone 4-Methyl-2-Pentanone 4-Methyl-2-Pentanone Benzene Bromofunchene Bromoform Carbon Disulfide Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chloropene Chloropene Chloropene Toluene-D8 Trichloroethene Toluene-D8 Trichloroethene Vinyl Acetate Vinyl Acetate Vinyl Chloride Xylenes (total) cis 1,3 Dichloropene cis-1,2-Dichloroethene trans 1,3-Dichloroethene

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ANALYTICAL SERVICES



CERTIFICATE OF ANALYSIS

IT CORPORATION
1250 CAPITAL OF TX HWY
BLDG. 3, SUITE 200
AUSTIN, TX 78746-6443
TIM JENNINGS

Date: 12/07/93

Work Order: B3-10-336

This is the Certificate of Analysis for the following samples:

Client Work ID: D.O.5001
Date Received: 10/26/93
Number of Samples: 21
Sample Type: SOIL

409832-003-01

I. Introduction

Samples were labeled as follows:

SAMPLE IDENTIFICATION	LABORATORY #
A1041	B3-10-336-01
A1042	B3-10-336-02
A1043	B3-10-336-03
A1044	B3-10-336-04
A1045	B3-10-336-05
A1046	B3-10-336-06
A1047	B3-10-336-07
A1047-MS	B3-10-336-08
A1047-MSD	B3-10-336-09
A1048	B3-10-336-10
A1049	B3-10-336-11
A1050	B3-10-336-12
A1051	B3-10-336-13

Reviewed and Approved:

Jon Bartell

Laboratory Director

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

Samples, continued from above:

SAMPLE IDENTIFICATION	LABORATORY #
A1052	B3-10-336-14
A1053	B3-10-336-15
A1054	B3-10-336-16
A1055	B3-10-336-17
J5420	B3-10-336-18
LAB BLANK #1	B3-10-336-19
LAB BLANK #1	B3-10-336-20
LAB BLANK 2	B3-10-336-21

II. QA/QC

The results presented in this report meet the statement of work requirements in accordance with Quality Control and Quality Assurance protocol except as noted in Section IV or in an optional sample narrative at the end of Section III.

In the presented analytical data, 'ND' or '<' indicates that the compound is not detected at the specified limit.

III. Analytical Data

The following page(s) supply results for requested analyses performed on the samples listed above.

The test results relate to tested items only. ITAS-Austin reserves the right to control report production except in whole.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1041
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 11/01/93
DILUTION FACTOR: 1.0

UNITS: UG/L

		Re	eporting				Re	porting
	Result Qua	1	Limit		Result	Qual	•	Limit
Chloromethane	10	ט	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	.5.	2-Chloroethylvinyl ether		10	U	10
1 1-Dichloroethane	5	U	5	Bromoform		5	U	5
ns-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	<pre>% Recovery</pre>	Limits
TOLUENE-D8	94	88 - 110
BROMOFLUOROBENZENE	100	86 - 115
1,2-DICHLOROETHANE-D4	103	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1042

SAMPLE DATE: 10/25/93 11:10:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	<u>Ref</u>	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.23	0.10	MG/KG	 11/04/93	EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 Work Order: B3-10-336 409832-003-01

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1042 SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 11/05/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Reporting
	Result	Qual	Limit		Result		Limit
Chloromethane	1	.0 ບ	10	1,2-Dichloropropane		5	บ 5
Bromomethane	1	.Ο υ		trans-1,3-Dichloropropene		_	U 5
Vinyl chloride	1	.Ο υ		Trichloroethene		5	υ 5
Chloroethane	1	.0 U		Chlorodibromomethane		5	U 5
Methylene chloride	2.	5 ј		1,1,2-Trichloroethane		_	U 5
Acetone	8.			Benzene		-	U 5
Carbon disulfide		5 U		cis-1,3-Dichloropropene		•	บ 5
1,1-Dichloroethene		5 U	•	2-Chloroethylvinyl ether		-	บ 10
' '-Dichloroethane		5 U	_	Bromoform	•		υ 5
is-1,2-Dichloroethene		5 U	5	2-Hexanone		-	U 50
cis-1,2-Dichloroethene		5 U	5	4-Methyl-2-pentanone		_	U 50
Chloroform		5 U	5	Tetrachloroethene	•	_	U 5
1,2-Dichloroethane		5 U	5	1,1,2,2-Tetrachloroethane		_	U 5
2-Butanone	10		100	Toluene		_	U 5
1,1,1-Trichloroethane		5 U	5	Chlorobenzene		_	• •
Carbon tetrachloride		5 U	5			•	U 5
Vinyl acetate		0 U	10	Ethylbenzene		_	U 5
Dichlorobromomethane		5 U	5	Styrene Xvlenes. total			U 5

Surrogates	% Recovery	Limits
TOLUENE-D8	102	81 - 117
BROMOFLUOROBENZENE	94	74 - 121
1,2-DICHLOROETHANE-D4	109	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
 - - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 6 of 90

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1042 SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/01/93
ANALYSIS DATE: 11/13/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			1	Reporti
	Result	Qual	Limit		Result		Limit
							
Phenol	0.330	-	0.330	2,6-Dinitrotoluene	0.330	υ	0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.825	σ	0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330	σ	0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	_	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.330	Ū	0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.330	ט	0.330
2-Methylphenol	0.330		0.330	Diethylphthalate	0.330	U	0.330
(2-Chloroisopropyl)ethe			0.330	4-Chlorophenyl-phenylether	0.330	บ	0.330
ethylphenol	0.330		0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine			0.330	4-Nitroaniline	0.825	σ	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	บ	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)		บ	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330		0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330		0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825		0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330		0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330		0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330		0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330		0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330		0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330		0.330
4-Chloro-3-methylphenol	0.330	U.	0.330	Benzo(a)anthracene	0.330		0.330
2-Methylnaphthalene	0.330	ប	0.330	Chrysene	0.330		0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate			0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330		0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330		0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330		0.330
Dimethylphthalate	0.330	ט	0.330	Indeno(1,2,3-cd)pyrene	0.330	_	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330		0.330
				· = •			

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1042

SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	74	23 - 120
2-Fluorobiphenyl	91	30 - 115
Terphenyl-D14	79	18 - 137
Phenol-D5	77	24 - 113
2-Fluorophenol	68	25 - 121
2,4,6-Tribromophenol	76	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 8 of 90

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-336

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1042

SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 107.526

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.0	N	0.88	7060	11/12/93
Aluminum	11000	N	22	6010	11/13/93
Barium	110	N*	22	6010	11/13/93
Beryllium	1.3		0.54	6010	11/13/93
Cadmium	0.51		0.54	6010	11/13/93
Chromium	11		1.1	6010	11/13/93
Copper	5.9		2.7	6010	11/13/93
Iron	8600	N*	11	6010	11/13/93
Nickel	9.0		4.3	6010	11/13/93
Lead	3.4	N	0.26	7421	11/12/93
Mercury	0.022	บ	0.022	7471	11/07/93
Silver	0.15		1.1	6010	11/13/93
Zinc	17		2.2	6010	11/13/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684 409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1043

SAMPLE DATE: 10/25/93 11:20:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.34	0.10	MG/KG	11/04/93	EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1043
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Re	porting
	Result (Qual	Limit		Result	Qua		
Chloromethane	10	ט כ	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	υ (10	trans-1,3-Dichloropropene		5	Ū	5
Vinyl chloride	10	υ (10	Trichloroethene		5	U	5
Chloroethane	10	ט כ	10	Chlorodibromomethane		5	U	5
Methylene chloride	1.6	5 JB	10	1,1,2-Trichloroethane		5	Ū	5
Acetone	9.9) J	100	Benzene		5	U	5
Carbon disulfide	5	5 U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	5 ប	5	2-Chloroethylvinyl ether	1	LO	U	10
1 1-Dichloroethane	5	5 T	5	Bromoform		5	U	5
ns-1,2-Dichloroethene	5	5 T	5	2-Hexanone	5	50	U	50
cis-1,2-Dichloroethene	5	5 U	5	4-Methyl-2-pentanone	5	50	U	50
Chloroform	5	5 U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	T T	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	5.7	' J	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	101	81 - 117
BROMOFLUOROBENZENE	96	74 - 121
1,2-DICHLOROETHANE-D4	107	70 - 120

- U none detected
- ${\tt J}$ estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 11 of 90

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work 0 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1043

SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/01/93 ANALYSIS DATE: 11/13/93 DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	porting			F	Reportin
F	Result	Qual	Limit		Result		Limit
Dia 1							
Phenol	0.330	_	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	•	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	-	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.825	บ	0.825
1,4-Dichlorobenzene	0.330	_	0.330	4-Nitrophenol	0.825	บ	0.825
Benzyl alcohol	0.330	_	0.330	Dibenzofuran	0.330	ט	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	ט (0.330	Diethylphthalate	0.330	U	0.330
(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	บ	0.330
ethylphenol	0.330	ט י	0.330	Fluorene	0.330	ប	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	บ	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)		บ	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330		0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330		0.330
2,4-Dimethylphenol	0.330	υ	0.330	Pentachlorophenol	0.825		0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330		0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330		0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330		0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330		0.330
Naphthalene	0.330	บ	0.330	Pyrene	0.330	-	0.330
4-Chloroaniline	0.330	υ	0.330	Butylbenzylphthalate	0.330		0.330
Hexachlorobutadiene	0.330	บ	0.330	3,3'-Dichlorobenzidine	0.330	_	0.330
4-Chloro-3-methylphenol	0.330	Ū	0.330	Benzo(a) anthracene	0.330		0.330
2-Methylnaphthalene	0.330		0.330	Chrysene	0.330		0.330
Hexachlorocyclopentadiene	0.330		0.330	bis(2-Ethylhexyl)phthalate			0.330
2,4,6-Trichlorophenol	0.330		0.330	Di-n-octylphthalate	0.330		0.330
2,4,5-Trichlorophenol	0.825		0.825	Benzo(b) fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330		0.330	Benzo(k) fluoranthene	0.330		0.330
2-Nitroaniline	0.825	-	0.825	Benzo(a)pyrene	0.330		0.330
Dimethylphthalate	0.330		0.330	Indeno(1,2,3-cd)pyrene	0.330		0.330
Acenaphthylene	0.330		0.330	Dibenzo(a,h)anthracene	0.330		0.330
		-		Benzo(g,h,i)perylene	0.330		0.330
				(g// L/pcr/rene	0.550		,

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1043

SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	58	23 - 120
2-Fluorobiphenyl	70	30 - 115
Terphenyl-D14	60	18 - 137
Phenol-D5	55	24 - 113
2-Fluorophenol	46	25 - 121
2,4,6-Tribromophenol	57	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 13 of 90

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work 0-34 Work Order: B3-10-336

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1043

SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 83.3333

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.1	N	1.2	7060	11/12/93
Aluminum	7000	N	17	6010	11/13/93
Barium	56	N*	17	6010	11/13/93
Beryllium	1.2		0.42	6010	11/13/93
Cadmium	0.80		0.42	6010	11/13/93
Chromium	9.7		0.83	6010	11/13/93
Copper	4.6		2.1	6010	11/13/93
Iron	8200	N*	8.3	6010	11/13/93
Nickel	11		3.3	6010	11/13/93
Lead	4.4	N	0.35	7421	11/12/93
Mercury	0.022	ប	0.022	7471	11/07/93
Silver	0.24		0.83	6010	11/13/93
Zinc	14		1.7	6010	11/13/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1044

SAMPLE DATE: 10/25/93 11:25:00

SAMPLE MATRIX: SOIL

	Note	•	Reporting		Date	Method
Test Name	<u>Ref</u>	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.100	0.10	MG/KG	11/04/93	EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1044 SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 11/05/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting			R	eporting
	Result	Qual	Limit		Result Qu		
Chloromethane	10	υ C	10	1,2-Dichloropropane	4.6	J	5
Bromomethane	10	ט כ	10	trans-1,3-Dichloropropene		U	_
Vinyl chloride	16	ט כ	10	Trichloroethene	5	U	5
Chloroethane	10	ט כ	10	Chlorodibromomethane	5	IJ	-
Methylene chloride	1.8	3 ј	10	1,1,2-Trichloroethane	5	IJ	5
Acetone	7.	7 ЈВ	100	Benzene	5	U	5
Carbon disulfide		5 U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene		5 U	5	2-Chloroethylvinyl ether	10	U	10
1-Dichloroethane		5 U	5	Bromoform	5	U	5
ns-1,2-Dichloroethene	ţ	5 U	5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	ţ	5 U	5	4-Methyl-2-pentanone	50	Ū	50
Chloroform	5	5 U	5	Tetrachloroethene	5	U	5
1,2-Dichloroethane	5	5 U	5	1,1,2,2-Tetrachloroethane	5	Ū	5
2-Butanone	100	U	100	Toluene	5	U	5
1,1,1-Trichloroethane	5	5 U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	T T	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	Ū	5
Dichlorobromomethane	5	ט פ	5	Xylenes, total	5	ט	5

Surrogates	% Recovery	Limits
TOLUENE-D8	101	81 - 117
BROMOFLUOROBENZENE	92	74 - 121
1,2-DICHLOROETHANE-D4	109	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1044
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/01/93 ANALYSIS DATE: 11/13/93 DILUTION FACTOR: 0.033

UNITS: MG/KG Reporting Reportir Result Qual Limit Result Qual Limit Phenol 0.330 U 0.330 2,6-Dinitrotoluene 0.330 U 0.330 bis(2-Chloroethyl)ether 0.330 U 0.330 3-Nitroaniline 0.825 U 0.825 2-Chlorophenol 0.330 U 0.330 Acenaphthene 0.330 U 0.330 1,3-Dichlorobenzene 0.330 U 0.330 2,4-Dinitrophenol 0.825 U 0.825 1,4-Dichlorobenzene 0.330 U 0.330 4-Nitrophenol 0.825 U 0.825 Benzyl alcohol 0.330 U 0.330 Dibenzofuran 0.330 U 0.330 1,2-Dichlorobenzene 0.330 U 0.330 2,4-Dinitrotoluene 0.330 U 0.330 2-Methylphenol 0.330 U 0.330 Diethylphthalate 0.330 U 0.330 '(2-Chloroisopropyl)ether 0.330 U 0.330 4-Chlorophenyl-phenylether 0.330 U 0.330 .ethylphenol 0.330 U 0.330 Fluorene 0.330 U 0.330 N-Nitroso-di-n-propylamine 0.330 U 0.330 4-Nitroaniline 0.825 U 0.825 Hexachloroethane 0.330 U 0.330 4,6-Dinitro-2-methylphenol 0.825 U 0.825 Nitrobenzene 0.330 U 0.330 N-Nitrosodiphenylamine (1) 0.330 U 0.330 Isophorone 0.330 U 0.330 4-Bromophenyl-phenylether 0.330 U 0.330 2-Nitrophenol 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 2,4-Dimethylphenol 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 bis(2-Chloroethoxy)methane 0.330 U 0.330 Anthracene 0.330 U 0.330 2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.330 1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Pyrene 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 Hexachlorobutadiene 0.330 U 0.330 3,3'-Dichlorobenzidine 0.330 U 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a) anthracene U 0.330 0.330 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330 2,4,6-Trichlorophenol 0.330 U 0.330 Di-n-octylphthalate 0.330 U 0.330 2,4,5-Trichlorophenol 0.825 U 0.825 Benzo(b) fluoranthene 0.330 U 0.330 2-Chloronaphthalene 0.330 U 0.330 Benzo(k) fluoranthene U 0.330 0.330 2-Nitroaniline 0.825 U 0.825 Benzo(a)pyrene 0.330 U 0.330 Dimethylphthalate 0.330 U 0.330 Indeno(1,2,3-cd)pyrene 0.330 U 0.330 Acenaphthylene 0.330 U 0.330 Dibenzo(a,h)anthracene 0.330 U 0.330 Benzo(g,h,i)perylene 0.330 U 0.330

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1044

SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	77	23 - 120
2-Fluorobiphenyl	91	30 - 115
Terphenyl-D14	80	18 - 137
Phenol-D5	69	24 - 113
2-Fluorophenol	60	25 - 121
2,4,6-Tribromophenol	82	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1044

SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 94.3396

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date	
Arsenic	4.2	 N	1.1	7060	11/12/93	•
Aluminum	9800	N	19	6010	11/12/93	
Barium	270	N*	19	6010	11/13/93	
Beryllium	1.9	-	0.47	6010	11/13/93	
Cadmium	0.92		0.47	6010	11/13/93	
Chromium	15		0.94	6010	11/13/93	
Copper	8.6		2.4	6010	11/13/93	
Iron	14000	N*	9.4	6010	11/13/93	
Nickel	16		3.8	6010	11/13/93	
Lead	4.5	N	0.33	7421	11/12/93	
Mercury	0.023	U	0.023	7471	11/07/93	
Silver	0.20	Ū	0.023	6010		
Zinc	20		1.9	6010	11/13/93 11/13/93	

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance</p>
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1045

SAMPLE DATE: 10/25/93 11:35:00

	Note		Reporting	Date	Method	
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.13	0.10	MG/KG	11/04/93	EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1045

SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 11/05/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Repo	rting
	Result Qu	ıal	Limit	·	Result	Qual	Li	mit
Chloromethane	10	บ	10	1,2-Dichloropropane	8.	. 5	U	5
Bromomethane	10	บ	10	trans-1,3-Dichloropropene		5	Ū	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	บ	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	13	JB	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	2.6	J	5	2-Chloroethylvinyl ether	1	10	U	10
' '-Dichloroethane	5	U	5	Bromoform		5	U	5
ns-1,2-Dichloroethene	5	บ	5	2-Hexanone	5	0	U	50
cis-1,2-Dichloroethene	4.1	J	5	4-Methyl-2-pentanone	5	0	U	50
Chloroform	5	U	5	Tetrachloroethene	7.	5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	Ū	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits				
TOLUENE-D8	101	81 - 117				
BROMOFLUOROBENZENE	96	74 - 121				
1,2-DICHLOROETHANE-D4	111	70 - 120				

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1045 SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/01/93 ANALYSIS DATE: 11/13/93 DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			I	Reporti
Re	esult	Qual	Limit		Result	Qual	Limit
Phenol							
	0.330		0.330	2,6-Dinitrotoluene	0.330		0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.825		0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330	•	0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	•	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	_	0.330	Dibenzofuran	0.330) U	0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.330	U (0.330
2-Methylphenol	0.330		0.330	Diethylphthalate	0.330) U	0.330
<pre>9(2-Chloroisopropyl)ether</pre>	0.330		0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
Methylphenol	0.330		0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330		0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	ט	0.330
Isophorone	0.330		0.330	4-Bromophenyl-phenylether	0.330	ט	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	ט	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	Ū	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	ט	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	ט	0.330
2,4-Dichlorophenol	0.330	υ.	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	υ	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	Ū	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330		0.330
Hexachlorobutadiene	0.330	ט	0.330	3,3'-Dichlorobenzidine	0.330		0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	Ū	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330		0.330
2,4,6-Trichlorophenol	0.330	บ	0.330	Di-n-octylphthalate	0.330		0.330
2,4,5-Trichlorophenol	0.825	บ	0.825	Benzo(b)fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330	บ	0.330	Benzo(k)fluoranthene	0.330		0.330
2-Nitroaniline	0.825		0.825	Benzo(a)pyrene	0.330		0.330
Dimethylphthalate	0.330	บ	0.330	Indeno(1,2,3-cd)pyrene	0.330	_	0.330
Acenaphthylene	0.330		0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330		0.330
				(3)		_	

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1045 SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	74	23 - 120				
2-Fluorobiphenyl	90	30 - 115				
Terphenyl-D14	76	18 - 137				
Phenol-D5	72	24 - 113				
2-Fluorophenol	61	25 - 121				
2,4,6-Tribromophenol	72	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-336

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1045 SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 94.3396

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.8	N	1.0	7060	11/12/93
Aluminum	8800	N	19	6010	11/13/93
Barium	410	N*	19	6010	11/13/93
Beryllium	1.6		0.47	6010	11/13/93
Cadmium	0.68		0.47	6010	11/13/93
Chromium	13		0.94	6010	11/13/93
Copper	7.9		2.4	6010	11/13/93
Iron	12000	N*	9.4	6010	11/13/93
Nickel	14		3.8	6010	11/13/93
Lead	6.6	N	0.31	7421	11/12/93
Mercury	0.022	U	0.022	7471	11/07/93
Silver	0.098	_	0.94	6010	11/13/93
Zinc	18		1.9	6010	11/13/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1046

SAMPLE DATE: 10/25/93 14:15:00

	Note		Reporting		Date Method
Test Name	<u>Ref</u>	Result	Limit	Units	Analyzed Reference
Chromium VI		0.11	0.10	MG/KG	11/04/93 EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1046

SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Re	porting
	Result Qua	1	Limit		Result	Qual		Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	1.0	J	10	1,1,2-Trichloroethane		5	U	5
Acetone	120	В	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		LO	U	10
`-Dichloroethane	5	U	5	Bromoform		5	U	5
ns-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	5.6	J	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xvlenes, total		5	U	5

Surrogates	% Recovery	Limits				
TOLUENE-D8	104	81 - 117				
BROMOFLUOROBENZENE	95	74 - 121				
1,2-DICHLOROETHANE-D4	109	70 - 120				

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1046 SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/01/93 ANALYSIS DATE: 11/14/93 DILUTION FACTOR: 0.033

UNITS: MG/KG		R	eporting			1	Reporting
	Result	Qual	Limit		Result	Qual	
Phenol	0.330		0.330	2,6-Dinitrotoluene	0.330	ט כ	0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.82	5 U	0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330	ט כ	0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.829	U	0.825
1,4-Dichlorobenzene	0.330	_	0.330	4-Nitrophenol	0.82	0	0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.330	υ (0.330
1,2-Dichlorobenzene	0.330) U	0.330	2,4-Dinitrotoluene	0.330	ט כ	0.330
2-Methylphenol	0.330	U (0.330	Diethylphthalate	0.330	U	0.330
' (2-Chloroisopropyl)ethe	r 0.330) U	0.330	4-Chlorophenyl-phenylether	0.330	υ (0.330
ethylphenol	0.330	-	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.829		0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825		0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)			0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330		0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330		0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	ט	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330		0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	ט (0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330		0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330		0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330		0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330		0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330		0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	_	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330		0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate			0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330		0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330		0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330		0.330
Dimethylphthalate	0.330	บ	0.330	Indeno(1,2,3-cd)pyrene	0.330		0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330		0.330

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1046

SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates.	% Recovery	Limits				
Nitrobenzene-D5	77	23 - 120				
2-Fluorobiphenyl	89	30 - 115				
Terphenyl-D14	83	18 - 137				
Phenol-D5	65	24 - 113				
2-Fluorophenol	55	25 - 121				
2,4,6-Tribromophenol	92	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684

Work Order: B3-10-336

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1046

SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 105.263

UNITS: MG/KG

Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
2.0	N	0.94	7060	11/12/93
13000	N	21	6010	11/13/93
400	N*	21	6010	11/13/93
2.4		0.53	6010	11/13/93
1.00		0.53	6010	11/13/93
12		1.1	6010	11/13/93
8.3		2.6	6010	11/13/93
16000	N*	11	6010	11/13/93
13		4.2	6010	11/13/93
4.7	N	0.28	7421	11/12/93
0.027		0.022	7471	11/07/93
0.50		1.1	6010	11/13/93
18		2.1	6010	11/13/93
	2.0 13000 400 2.4 1.00 12 8.3 16000 13 4.7 0.027 0.50	Result Qual 2.0 N 13000 N 400 N* 2.4 1.00 12 8.3 16000 N* 13 4.7 N 0.027 0.50	Result Qual Limit 2.0 N 0.94 13000 N 21 400 N* 21 2.4 0.53 1.00 0.53 12 1.1 8.3 2.6 16000 N* 11 13 4.2 4.7 N 0.28 0.027 0.022 0.50 1.1	Result Qual Limit Reference 2.0 N 0.94 7060 13000 N 21 6010 400 N* 21 6010 2.4 0.53 6010 1.00 0.53 6010 12 1.1 6010 8.3 2.6 6010 16000 N* 11 6010 13 4.2 6010 4.7 N 0.28 7421 0.027 0.022 7471 0.50 1.1 6010

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01

(512) 892-6684 Work Order: B3-10-336

SAMPLE ID: A1047

SAMPLE DATE: 10/25/93 14:20:00

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.26	0.10	MG/KG	11/04/93	EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1047

SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

Reporting Reporting Result Qual Limit Result Qual Limit Chloromethane 10 U 10 1,2-Dichloropropane U 5 Bromomethane 10 U 10 trans-1,3-Dichloropropene 5 U 5 Vinyl chloride 10 U 10 Trichloroethene 5 U 5 Chloroethane 10 U 10 Chlorodibromomethane 5 5 Methylene chloride 3.0 1,1,2-Trichloroethane J 10 5 U 5 Acetone 130 В 100 Benzene 5 U 5 Carbon disulfide 5 U 5 cis-1,3-Dichloropropene U 5 5 1,1-Dichloroethene 5 Ū 5 2-Chloroethylvinyl ether 10 U 10 1-Dichloroethane 5 U 5 Bromoform U 5 5 uns-1,2-Dichloroethene 5 U 5 2-Hexanone 50 U 50 cis-1,2-Dichloroethene 5 U 5 4-Methyl-2-pentanone 50 50 U Chloroform 5 U 5 Tetrachloroethene 5 5 1,2-Dichloroethane 5 U 5 1,1,2,2-Tetrachloroethane 5 U 5 2-Butanone 8.5 J 100 Toluene 5 U 5 1,1,1-Trichloroethane 5 U 5 Chlorobenzene 5 U 5 Carbon tetrachloride 5 - ช 5 Ethylbenzene 5 5 U Vinyl acetate 10 U 10 Styrene 5 U 5 Dichlorobromomethane U 5 5 Xylenes, total 5

Surrogates	% Recovery	Limits
TOLUENE-D8	104	81 - 117
BROMOFLUOROBENZENE	95	74 - 121
1,2-DICHLOROETHANE-D4	111	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1047 SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/01/93
ANALYSIS DATE: 11/14/93
DILUTION FACTOR: 0.033
UNITS: MG/KG

UNITS: MG/KG		Re	eporting				Reportin
	Result	Qual	Limit		Result		Limit
Phenol	0.33	ט ט	0.330	2,6-Dinitrotoluene	0.330) 11	0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.82		0.825
2-Chlorophenol	0.33		0.330	Acenaphthene	0.330		0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.825		0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.825		0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.330	_	0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.330	_	0.330
2-Methylphenol	0.330		0.330	Diethylphthalate	0.330		0.330
(2-Chloroisopropyl)ethe			0.330	4-Chlorophenyl-phenylether			0.330
ethylphenol	0.330		0.330	Fluorene	0.330		0.330
N-Nitroso-di-n-propylamine	0.330	ט כ	0.330	4-Nitroaniline	0.825		0.825
Hexachloroethane	0.330		0.330	4,6-Dinitro-2-methylphenol		_	0.825
Nitrobenzene	0.330	ט כ	0.330	N-Nitrosodiphenylamine (1)			0.330
Isophorone	0.330		0.330	4-Bromophenyl-phenylether	0.330		0.330
2-Nitrophenol	0.330		0.330	Hexachlorobenzene	0.330		0.330
2,4-Dimethylphenol	0.330	υ (0.330	Pentachlorophenol	0.825		0.825
Benzoic Acid	0.330	ט כ	0.330	Phenanthrene	0.330		0.330
bis(2-Chloroethoxy)methane	0.330	υ (0.330	Anthracene	0.330		0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	_	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330		0.330
Naphthalene	0.330		0.330	Pyrene	0.330	_	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	_	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330		0.330
4-Chloro-3-methylphenol	0.330		0.330	Benzo(a)anthracene	0.330		0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330		0.330
Hexachlorocyclopentadiene	0.330	ט (0.330	bis(2-Ethylhexyl)phthalate			0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330		0.330
2,4,5-Trichlorophenol	0.825	T T	0.825	Benzo(b) fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330		0.330
2-Nitroaniline	0.825	T T	0.825	Benzo(a) pyrene	0.330		0.330
Dimethylphthalate	0.330		0.330	Indeno(1,2,3-cd)pyrene	0.330		0.330
Acenaphthylene	0.330		0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330		0.330

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1047

SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	67	23 - 120
2-Fluorobiphenyl	88	30 - 115
Terphenyl-D14	78	18 - 137
Phenol-D5	72	24 - 113
2-Fluorophenol	58	25 - 121
2,4,6-Tribromophenol	74	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1047

SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 101.010

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	3.2	N	0.86	7060	11/12/93
Aluminum	10000	N	20	6010	11/13/93
Barium	760	N*	20	6010	11/13/93
Beryllium	1.3		0.51	6010	11/13/93
Cadmium	1.3		0.51	6010	11/13/93
Chromium	14		1.0	6010	11/13/93
Copper	6.8		2.5	6010	11/13/93
Iron	12000	N*	10	6010	11/13/93
Nickel	16		4.0	6010	11/13/93
Lead	6.1	N	0.26	7421	11/12/93
Mercury	0.022	U	0.022	7471	11/07/93
Silver	0.11		1.0	6010	11/13/93
Zinc	18		2.0	6010	11/13/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work 0-3

Work Order: B3-10-336

SAMPLE ID: A1047-MS

SAMPLE DATE: 10/25/93 14:20:00

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		93		% REC	11/05/93	

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1047-MS
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0

UNITS: % REC

		Result		
1,1-Dichloroethene	90	Trichloro	ethene	85
		Benzene		96
		Toluene		103
		Chloroben	zene	103
	Surrogates	% Recovery	Limits	
	TOLUENE-D8	103	81 - 117	
	BROMOFLUOROBENZENE	97	74 - 121	

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result

111 70 - 120

* - Surrogate recovery is outside QC limit

1,2-DICHLOROETHANE-D4

- D compound identified at a secondary dilution factor
- E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01

Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1047-MS
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/01/93 ANALYSIS DATE: 11/13/93 DILUTION FACTOR: 0.033

UNITS: % REC

Result Result Phenol 79 Acenaphthene 121 2-Chlorophenol 90 4-Nitrophenol 67 1,4-Dichlorobenzene 75 2,4-Dinitrotoluene 84 N-Nitroso-di-n-propylamine 99 Pentachlorophenol 74 1,2,4-Trichlorobenzene 89 Pyrene 96 4-Chloro-3-methylphenol 89

Surrogates	% Recovery	Limits
Nitrobenzene-D5	79	23 - 120
2-Fluorobiphenyl	92	30 - 115
Terphenyl-D14	77	18 - 137
Phenol-D5	72	24 - 113
2-Fluorophenol	70	25 - 121
2,4,6-Tribromophenol	82	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 World

Work Order: B3-10-336

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1047-MS
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 101.010

UNITS: % REC

	Result	Method Reference	Analysis Date
Arsenic	23.8	7060	11/12/93
Aluminum	1134	6010	11/13/93
Barium	0	6010	11/13/93
Beryllium	83	6010	11/13/93
Cadmium	86	6010	11/13/93
Chromium	92	6010	11/13/93
Copper	92	6010	11/13/93
Iron	896	6010	11/13/93
Nickel	86	6010	11/13/93
Lead	3.4	7421	11/12/93
Mercury	109	7471	11/07/93
Silver	86	6010	11/13/93
Zinc	86	6010	11/13/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Matrix spike outside control limits due to matrix interference on aluminum, barium and iron analysis by ICPES, affecting all soil samples in batch. LCS / LCSD results and method Quality Control were acceptable.

Duplicate analysis outside control limits due to matrix interference on barium and iron analysis by ICPES, affecting all soil samples in batch. LCS/LCSD results & method QC were acceptable.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684 409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1047-MSD

SAMPLE DATE: 10/25/93 14:20:00

	Note	Reporting		Date	Method	
Test Name	<u>Ref</u>	Result	Limit	<u>Units</u>	Analyzed	Reference
Chromium VI		96		% REC	11/05/93	EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1047-MSD SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 11/05/93 DILUTION FACTOR: 1.0

UNITS: % REC

	Result			Result
1,1-Dichloroethene	99	Trichloro	ethene	89
		Benzene		102
		Toluene		110
		Chloroben	zene	108
	Surrogates	% Recovery	Limits	
	TOLUENE-D8	103	81 - 117	
	BROMOFLUOROBENZENE	98	74 - 121	
	1,2-DICHLOROETHANE-D4	110	70 - 120	

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

Pagul+

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

Result

METHOD REFERENCE: EPA8270

SAMPLE ID: A1047-MSD SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/01/93 ANALYSIS DATE: 11/13/93 DILUTION FACTOR: 0.033

UNITS: % REC

•	Result		
Phenol	73	Acenaphthene	112
2-Chlorophenol	78	4-Nitrophenol	62
1,4-Dichlorobenzene	67	2,4-Dinitrotoluene	74
N-Nitroso-di-n-propylamine	86	Pentachlorophenol	62
1,2,4-Trichlorobenzene	83	Pyrene	89
4-Chloro-3-methylphenol	81		

Surrogates	% Recovery	Limits					
Nitrobenzene-D5	74	23 - 120					
2-Fluorobiphenyl	91	30 - 115					
Terphenyl-D14	73	18 - 137					
Phenol-D5	67	24 - 113					
2-Fluorophenol	63	25 - 121					
2,4,6-Tribromophenol	76	19 - 122					

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1047-MSD SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 113.636

UNITS: % REC

 	Result	Method Reference	Analysis Date	
Arsenic	44.7	7060	11/12/93	
Aluminum	1090	6010	11/13/93	
Barium	0	6010	11/13/93	
Beryllium	84	6010	11/13/93	
Cadmium	87	6010	11/13/93	
Chromium	92	6010	11/13/93	
Copper	93	6010	11/13/93	
Iron	833	6010	11/13/93	
Nickel	87	6010	11/13/93	
Lead	0	7421	11/12/93	
Mercury	104	7471	11/07/93	
Silver	87	6010	11/13/93	
Zinc	87	6010	11/13/93	

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance</p>
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Matrix spike outside control limits due to matrix interference on aluminum, barium and iron analysis by ICPES, affecting all soil samples in batch. LCS / LCSD results and method Quality Control were acceptable.

Duplicate analysis outside control limits due to matrix interference on barium and iron analysis by ICPES, affecting all soil samples in batch. LCS/LCSD results & method QC were acceptable.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1048

SAMPLE DATE: 10/25/93 14:30:00

	Note		Reporting		Nethod	
Test_Name	Ref	Result	Limit	<u>Units</u>	Analyzed	Reference
Chromium VI		0.500	0.50	MG/KG	11/05/93	EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1048

SAMPLE DATE: 10/25/93

SAMPLE MATRIX: SOIL

ANALYSIS DATE: 11/05/93

DILUTION FACTOR: 1.0

UNITS: UG/KG

			Repo	rting				Re	porting
	Result	Qual	Li	mit		Result	Qua]	L	Limit
Chloromethane	:	LO	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	:	LO	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride		LO	U	10	Trichloroethene		5	U	5
Chloroethane	:	LO	Ū	10	Chlorodibromomethane		5	U	5
Methylene chloride	1.	. 4	J	10	1,1,2-Trichloroethane		5	U	5
Acetone		L3 J	В.	100	Benzene		5	U	5
Carbon disulfide		5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5	U	5	2-Chloroethylvinyl ether	:	10	U	10
1-Dichloroethane		5	Ū	5	Bromoform		5	U	5
ns-1,2-Dichloroethene		5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene		5	U	5	4-Methyl-2-pentanone		50	Ū	50
Chloroform		5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	4.	. 0	J	100	Toluene		5	U	5
1,1,1-Trichloroethane		5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5	IJ	5	Ethylbenzene		5	U	5
Vinyl acetate	1	LO 1	U	10	Styrene		5	U	5
Dichlorobromomethane		5 1	U	5	Xvlenes, total		5	U	5

Surrogates	% Recovery	Limits					
TOLUENE-D8	101	81 - 117					
BROMOFLUOROBENZENE	96	74 - 121					
1,2-DICHLOROETHANE-D4	109	70 - 120					

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 802-6684

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1048
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/01/93 ANALYSIS DATE: 11/13/93 DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	porting			I	Reportin
R	esult	Qual	Limit		Result		Limit
Phenol	0.330		0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	-	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	-	0.330	Acenaphthene	0.330	ט (0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	ט	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	ט (0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	ט (0.330
''s(2-Chloroisopropyl)ether	0.330	ט	0.330	4-Chlorophenyl-phenylether	0.330	ט (0.330
ethylphenol	0.330	ט	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	σ	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825		0.825
Nitrobenzene	0.330	Ū	0.330	N-Nitrosodiphenylamine (1)		U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	υ (0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	υ	0.330
2,4-Dimethylphenol	0.330	บ	0.330	Pentachlorophenol	0.825		0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330		0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	υ	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330		0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330		0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330		0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330		0.330
Hexachlorobutadiene	0.330	บ	0.330	3,3'-Dichlorobenzidine	0.330		0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330		0.330
2-Methylnaphthalene	0.330	บ	0.330	Chrysene	0.330		0.330
Hexachlorocyclopentadiene	0.330	บ	0.330	bis(2-Ethylhexyl)phthalate			0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330		0.330
2,4,5-Trichlorophenol	0.825	บ	0.825	Benzo(b)fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330	บ	0.330	Benzo(k)fluoranthene	0.330		0.330
2-Nitroaniline	0.825	บ	0.825	Benzo(a)pyrene	0.330	_	0.330
Dimethylphthalate	0.330		0.330	Indeno(1,2,3-cd)pyrene	0.330	_	0.330
Acenaphthylene	0.330		0.330	Dibenzo(a,h)anthracene	0.330	_	0.330
				Benzo(g,h,i)perylene	0.330	-	0.330
				121 1 12			

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work 0003 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1048 SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

Surrogates ·	% Recovery	Limits					
Nitrobenzene-D5	69	23 - 120					
2-Fluorobiphenyl	84	30 - 115					
Terphenyl-D14	73	18 - 137					
Phenol-D5	69	24 - 113					
2-Fluorophenol	58	25 - 121					
2,4,6-Tribromophenol	72	19 - 122					

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1048

SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 117.647

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date	
Arsenic	1.8	N	1.1	7060	11/12/93	•
Aluminum	7400	N	24	6010	11/13/93	
Barium	390	N*	24	6010	11/13/93	
Beryllium	1.2		0.59	6010	11/13/93	
Cadmium	0.46		0.59	6010	11/13/93	
Chromium	11		1.2	6010	11/13/93	
Copper	6.0		2.9	6010	11/13/93	
Iron	8000	N*	12	6010	11/13/93	
Nickel	9.3		4.7	6010	11/13/93	
Lead	4.6	N	0.34	7421	11/12/93	
Mercury	0.020	บ	0.020	7471	11/07/93	
Silver	0.023		1.2	6010	11/13/93	
Zinc	15		2.4	6010	11/13/93	

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance</p>
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1049

SAMPLE DATE: 10/25/93 14:40:00

	Note		Reporting	Date Method	
Test Name	Ref	Result	Limit	Units	Analyzed Reference
Chromium VI		0.500	0.50	MG/KG	11/05/93 EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1049

SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 11/05/93

DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Re	porting
	Result Q	ual	Limit		Result	Qua	1	Limit
Chloromethane	10	υ	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	บ	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	9.4	JВ	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
1-Dichloroethane	5	U	5	Bromoform		5	U	5
ns-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene	5	บ	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	บ	5	Ethylbenzene		5	U	5
Vinyl acetate	. 10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	101	81 - 117
BROMOFLUOROBENZENE	99	74 - 121
1,2-DICHLOROETHANE-D4	110	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1049
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/01/93
ANALYSIS DATE: 11/13/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			I	Reportir
Re	esult	Qual	Limit		Result		Limit
-							
Phenol	0.330		0.330	2,6-Dinitrotoluene	0.330		0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.82	5 U	0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330	ט כ	0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.82	5 U	0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.825	5 U	0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.330	ט כ	0.330
1,2-Dichlorobenzene	0.330	υ (0.330	2,4-Dinitrotoluene	0.330	ט כ	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330
3(2-Chloroisopropyl)ether	0.330	ט כ	0.330	4-Chlorophenyl-phenylether	0.330	ט כ	0.330
<i>i</i> ethylphenol	0.330	ט כ	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330) U	0.330	4-Nitroaniline	0.825	T T	0.825
Hexachloroethane	0.330) บ	0.330	4,6-Dinitro-2-methylphenol	0.825	ט פ	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U (0.330	4-Bromophenyl-phenylether	0.330	ט כ	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	ט (0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825		0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330		0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330		0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330		0.330
1,2,4-Trichlorobenzene	0.330	υ (0.330	Fluoranthene	0.330		0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330		0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330		0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	_	0.330
4-Chloro-3-methylphenol	0.330	ט ט	0.330	Benzo(a)anthracene	0.330		0.330
2-Methylnaphthalene	0.330	ט (0.330	Chrysene	0.330		0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate		-	0.330
2,4,6-Trichlorophenol	0.330		0.330	Di-n-octylphthalate	0.330		0.330
2,4,5-Trichlorophenol	0.825		0.825	Benzo(b)fluoranthene	0.330	_	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330		0.330
2-Nitroaniline	0.825		0.825	Benzo(a)pyrene	0.330		0.330
Dimethylphthalate	0.330		0.330	Indeno(1,2,3-cd)pyrene	0.330		0.330
Acenaphthylene	0.330		0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330		0.330
				· * * * * * * * * * * * * * * * * * * *			

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-336

TEST NAME: ABM HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1049 SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits			
Nitrobenzene-D5	72	23 - 120			
2-Fluorobiphenyl	86	30 - 115			
Terphenyl-D14	74	18 - 137			
Phenol-D5	67	24 - 113			
2-Fluorophenol	58	25 - 121			
2,4,6-Tribromophenol	75	19 - 122			

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor

E - concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01

(512) 892-6684 Work Order: B3-10-336

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1049

SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 103.092

UNITS: MG/KG

 ~~~~~~~~~~~~~~~						
 	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date	
Arsenic	3.3	N	0.86	7060	11/12/93	
Aluminum	9500	N	21	6010	11/13/93	
Barium	690	N*	21	6010	11/13/93	
Beryllium	1.6		0.52	6010	11/13/93	
Cadmium	0.26		0.52	6010	11/13/93	
Chromium	13		1.0	6010	11/13/93	
Copper	7.9		2.6	6010	11/13/93	
Iron	12000	N*	10	6010	11/13/93	
Nickel	11		4.1	6010	11/13/93	
Lead	8.5	N	1.0	7421	11/12/93	
Mercury	0.022	U	0.022	7471	11/07/93	
Silver	0.26		1.0	6010	11/13/93	
Zinc	15		2.1	6010	11/13/93	

## Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1050

SAMPLE DATE: 10/25/93 15:50:00

	Note	Reporting			Date	Date Method		
Test Name	<u>Ref</u>	Result	<u>Limit</u>	Units	Analy	zed	Reference	
Chromium VI		0.100	0.10	MG/KG	11/05	/93	EPA7196	

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1050 SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Reporting
	Result Qua	al	Limit		Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	υ 5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	Ŭ 5
Vinyl chloride	10	U	10	Trichloroethene		5	υ 5
Chloroethane	10	บ	10	Chlorodibromomethane		5	υ 5
Methylene chloride	1.5	J	10	1,1,2-Trichloroethane		5	υ 5
Acetone	9.2	JB	100	Benzene		5	υ 5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		_	υ 5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	•	_	υ 10
1 1-Dichloroethane	5	บ	5	Bromoform	•	5	υ 5
ns-1,2-Dichloroethene	5	U	5	2-Hexanone		50	บ 50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	-		บ 50
Chloroform	5	บ	5	Tetrachloroethene	•	_	U 5
1,2-Dichloroethane	5	Ū	5	1,1,2,2-Tetrachloroethane		_	υ 5
2-Butanone	100	Ū	100	Toluene			υ 5
1,1,1-Trichloroethane	5	Ū	5	Chlorobenzene		_	υ 5
Carbon tetrachloride	5	Ū	5	Ethylbenzene		_	υ 5
Vinyl acetate	10	Ü	10	Styrene		_	บ 5
Dichlorobromomethane	5	Ū	5	Xylenes, total		-	บ 5

Surrogates	% Recovery	Limits			
TOLUENE-D8	104	81 - 117			
BROMOFLUOROBENZENE	95	74 - 121			
1,2-DICHLOROETHANE-D4	108	70 - 120			

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1050 SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/01/93 ANALYSIS DATE: 11/13/93 DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			F	Reportin
	Result	Qual	Limit		Result	Qual	Limit
Phenol	0.330	) II	0.330	2 6 Binitarahaluana	0 226		0 220
bis(2-Chloroethyl)ether	0.330	_	0.330	2,6-Dinitrotoluene 3-Nitroaniline	0.330	-	0.330
2-Chlorophenol	0.330		0.330		0.825	-	0.825
1,3-Dichlorobenzene	0.330		0.330	Acenaphthene	0.330	_	0.330
1,4-Dichlorobenzene	0.330	_	0.330	2,4-Dinitrophenol	0.825		0.825
Benzyl alcohol	0.330	-	0.330	4-Nitrophenol Dibenzofuran	0.825	_	0.825
1,2-Dichlorobenzene	0.330		0.330		0.330	_	0.330
2-Methylphenol	0.330	_	0.330	2,4-Dinitrotoluene	0.330		0.330
' ' (2-Chloroisopropyl)ethe			0.330	Diethylphthalate		_	
ethylphenol	0.330	_	0.330	4-Chlorophenyl-phenylether Fluorene			0.330
N-Nitroso-di-n-propylamine	0.330	_	0.330	4-Nitroaniline	0.330		0.330
Hexachloroethane	0.330	_	0.330		0.825		0.825
Nitrobenzene	0.330	_	0.330	4,6-Dinitro-2-methylphenol			0.825
Isophorone	0.330	_	0.330	N-Nitrosodiphenylamine (1) 4-Bromophenyl-phenylether	0.330		0.330 0.330
2-Nitrophenol	0.330		0.330	Hexachlorobenzene	0.330		0.330
2,4-Dimethylphenol	0.330		0.330			-	
Benzoic Acid	0.330		0.330	Pentachlorophenol Phenanthrene	0.825		0.825
bis(2-Chloroethoxy)methane	0.330		0.330	Anthracene	0.330		0.330
2,4-Dichlorophenol	0.330		0.330			_	0.330
1,2,4-Trichlorobenzene	0.330	•	0.330	Di-n-butylphthalate Fluoranthene	0.330		0.330
Naphthalene	0.330	_	0.330	Pyrene	0.330 0.330	_	0.330
4-Chloroaniline	0.330	_	0.330	-	0.330		0.330
Hexachlorobutadiene	0.330	_	0.330	Butylbenzylphthalate 3,3'-Dichlorobenzidine	0.330	_	0.330
4-Chloro-3-methylphenol	0.330	-	0.330	Benzo(a)anthracene	0.330		0.330 0.330
2-Methylnaphthalene	0.330	-	0.330	Chrysene	0.330		0.330
Hexachlorocyclopentadiene	0.330	-	0.330	_		_	0.330
2,4,6-Trichlorophenol	0.330		0.330	bis(2-Ethylhexyl)phthalate			
2,4,5-Trichlorophenol	0.825	_	0.825	Di-n-octylphthalate Benzo(b)fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330	-	0.330	· ·		_	0.330
2-Nitroaniline	0.825	_	0.825	Benzo(k)fluoranthene	0.330	_	0.330
Dimethylphthalate	0.330	_	0.330	Benzo(a)pyrene	0.330	_	0.330
Acenaphthylene	0.330	_	0.330	Indeno(1,2,3-cd)pyrene	0.330		0.330
<u></u>	0.550	J	0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1050 SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	60	23 - 120				
2-Fluorobiphenyl	78	30 - 115				
Terphenyl-D14	63	18 - 137				
Phenol-D5	62	24 - 113				
2-Fluorophenol	53	25 - 121				
2,4,6-Tribromophenol	60	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$  analyte is found in the associated blank as well as in the sample 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-336

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1050

SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 97.0873

UNITS: MG/KG

			~		
	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.3	N	0.86	7060	11/12/93
Aluminum	15000	N	19	6010	11/13/93
Barium	230	N*	19	6010	11/13/93
Beryllium	1.8		0.49	6010	11/13/93
Cadmium	0.98		0.49	6010	11/13/93
Chromium	14		0.97	6010	11/13/93
Copper	7.8		2.4	6010	11/13/93
Iron	12000	N*	9.7	6010	11/13/93
Nickel	11		3.9	6010	11/13/93
Lead	9.2	N	1.0	7421	11/12/93
Mercury	0.024	Ū	0.024	7471	11/07/93
Silver	0.079		0.97	6010	11/13/93
Zinc	21		1.9	6010	11/13/93

# Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1051

SAMPLE DATE: 10/25/93 16:00:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	<u>Analyzed</u>	Reference
Chromium VI		0.500	0.50	MG/KG	11/05/93	EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01

Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1051
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Re	porting
	Result Q	ual	Limit		Result	Qua.	1	Limit
Chloromethane	10	บ	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	υ	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	บ	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	บ	10	1,1,2-Trichloroethane		5	U	5
Acetone	7.7	JВ	100	Benzene		5	U	5
Carbon disulfide	5	ប	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	]	LO	Ū	10
1 1-Dichloroethane	5	U	5	Bromoform		5	Ū	5
ns-1,2-Dichloroethene	5	U	5	2-Hexanone	5	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	5	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	Ū	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	103	81 - 117
BROMOFLUOROBENZENE	96	74 - 121
1,2-DICHLOROETHANE-D4	105	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1051
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/01/93 ANALYSIS DATE: 11/13/93 DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			I	Reportin
R	esult	Qual	Limit		Result	Qual	Limit
Dhara I							
Phenol	0.330	•	0.330	2,6-Dinitrotoluene	0.330		0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.82	5 U	0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330	ט כ	0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.825	5 U	0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.825	ט פ	0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.330	ט כ	0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.330	ט כ	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	<b>U</b>	0.330
` (2-Chloroisopropyl)ether	0.330	υ	0.330	4-Chlorophenyl-phenylether	0.330	ט כ	0.330
.ethylphenol	0.330	U	0.330	Fluorene	0.330	ט כ	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	ט כ	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	ט פ	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	ט (	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	υ (	0.330
2-Nitrophenol	0.330	υ	0.330	Hexachlorobenzene	0.330	<b>U</b>	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	σ	0.825
Benzoic Acid	0.330	ט	0.330	Phenanthrene	0.330	ט (	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	<b>U</b>	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330		0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330		0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330		0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330		0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330		0.330
4-Chloro-3-methylphenol	0.330		0.330	Benzo(a)anthracene	0.330		0.330
2-Methylnaphthalene	0.330		0.330	Chrysene	0.330		0.330
Hexachlorocyclopentadiene	0.330		0.330	bis(2-Ethylhexyl)phthalate		-	0.330
2,4,6-Trichlorophenol	0.330		0.330	Di-n-octylphthalate	0.330	_	0.330
2,4,5-Trichlorophenol	0.825		0.825	Benzo(b) fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330		0.330	Benzo(k)fluoranthene	0.330		0.330
2-Nitroaniline	0.825	-	0.825	Benzo(a)pyrene	0.330		0.330
Dimethylphthalate	0.330		0.330	Indeno(1,2,3-cd)pyrene	0.330		0.330
Acenaphthylene	0.330		0.330	Dibenzo(a,h)anthracene	0.330		0.330
		•		Benzo(g,h,i)perylene	0.330		0.330
					0.550	9	

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1051 SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	79	23 - 120
2-Fluorobiphenyl	91	30 - 115
Terphenyl-D14	75	18 - 137
Phenol-D5	72	24 - 113
2-Fluorophenol	61	25 - 121
2,4,6-Tribromophenol	78	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

Page: 61 of 90

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Work Order: B3-10-336

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1051

SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 104.166

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date	
Arsenic	11	N	3.5	7060	11/12/93	_
Aluminum	8700	N	21	6010	11/13/93	
Barium	580	N*	21	6010	11/13/93	
Beryllium	1.9		0.52	6010	11/13/93	
Cadmium	0.94		0.52	6010	11/13/93	
Chromium	10		1.0	6010	11/13/93	
Copper	11		2.6	6010	11/13/93	
Iron	12000	N*	10	6010	11/13/93	
Nickel	28		4.2	6010	11/13/93	
Lead	27	N	1.0	7421	11/12/93	
Mercury	0.022	บ	0.022	7471	11/07/93	
Silver	0.69		1.0	6010	11/13/93	
Zinc	18		2.1	6010	11/13/93	
					• •	

#### Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1052

SAMPLE DATE: 10/25/93 16:05:00

SAMPLE MATRIX: SOIL

	Note	Reporting			Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.500	0.50	MG/KG	11/05/93	EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1052

SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		F	eporting				Rep	porting
	Result	Qual	Limit		Result	Qual	. I	Limit
Chloromethane	:	ιο τ	10	1,2-Dichloropropane		5	U	5
Bromomethane		LO T	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride		lo t	10	Trichloroethene		5	Ū	5
Chloroethane	1	LO T	10	Chlorodibromomethane		5	U	5
Methylene chloride	1	lo t	10	1,1,2-Trichloroethane		5	U	5
Acetone	10	00 ti	100	Benzene		5	U	5
Carbon disulfide		5 U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5 t	5	2-Chloroethylvinyl ether	:	10	U	10
1-Dichloroethane		5 U	5	Bromoform		5	U	5
.ns-1,2-Dichloroethene		5 U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene		5 U	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform		5 U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5 U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	<b>00</b> U	100	Toluene		5	U	5
1,1,1-Trichloroethane		5 U	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5 U	5	Ethylbenzene		5	U	5
Vinyl acetate	1	. <b>o</b> v	10	Styrene		5	U	5
Dichlorobromomethane		5 U	5	Xylenes, total		5	Ū	5

Surrogates	% Recovery	Limits
TOLUENE-D8	102	81 - 117
BROMOFLUOROBENZENE	93	74 - 121
1,2-DICHLOROETHANE-D4	108	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1052 **SAMPLE DATE: 10/25/93** SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/01/93 ANALYSIS DATE: 11/13/93 DILUTION FACTOR: 0.033

UNITS: MG/KG		R	porting			,	Reporting
F	Result		Limit		Result	Qual	Limit
Phenol	0.330	ט כ	0.330	2,6-Dinitrotoluene	0.330	ט כ	0.330
bis(2-Chloroethyl)ether	0.330	<b>U</b>	0.330	3-Nitroaniline	0.825	<b>u</b>	0.825
2-Chlorophenol	0.330	<b>U</b>	0.330	Acenaphthene	0.330		0.330
1,3-Dichlorobenzene	0.330	<b>U</b>	0.330	2,4-Dinitrophenol	0.825		0.825
1,4-Dichlorobenzene	0.330	<b>U</b>	0.330	4-Nitrophenol	0.825		0.825
Benzyl alcohol	0.330	<b>U</b>	0.330	Dibenzofuran	0.330		0.330
1,2-Dichlorobenzene	0.330	<b>U</b>	0.330	2,4-Dinitrotoluene	0.330		0.330
2-Methylphenol	0.330	<b>U</b>	0.330	Diethylphthalate	0.330		0.330
his(2-Chloroisopropyl)ether	0.330	<b>U</b>	0.330	4-Chlorophenyl-phenylether			0.330
∍thylphenol	0.330	ט (	0.330	Fluorene	0.330		0.330
N-Nitroso-di-n-propylamine	0.330	<b>U</b>	0.330	4-Nitroaniline	0.825		0.825
Hexachloroethane	0.330	U (	0.330	4,6-Dinitro-2-methylphenol			0.825
Nitrobenzene	0.330	υ	0.330	N-Nitrosodiphenylamine (1)			0.330
Isophorone	0.330	U (	0.330	4-Bromophenyl-phenylether	0.330		0.330
2-Nitrophenol	0.330	υ	0.330	Hexachlorobenzene	0.330		0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825		0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330		0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330		0.330
2,4-Dichlorophenol	0.330	ט ט	0.330	Di-n-butylphthalate	0.330		0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330		0.330
Naphthalene	0.330	ט י	0.330	Pyrene	0.330		0.330
4-Chloroaniline	0.330	ט	0.330	Butylbenzylphthalate	0.330		0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330		0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330		0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330		0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate			0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330		0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330		0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330		0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330		0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330		0.330
				- · · <del>-</del> · · -			

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1052

SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	74	23 - 120				
2-Fluorobiphenyl	89	30 - 115				
Terphenyl-D14	73	18 - 137				
Phenol-D5	69	24 - 113				
2-Fluorophenol	61	25 - 121				
2,4,6-Tribromophenol	76	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

Page: 66 of 90

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-336

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1052

SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 89.2857

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.6	N	1.1	7060	11/12/93
Aluminum	9000	N	18	6010	11/13/93
Barium	150	N*	18	6010	11/13/93
Beryllium	1.5		0.45	6010	11/13/93
Cadmium	0.79		0.45	6010	11/13/93
Chromium	11		0.89	6010	11/13/93
Copper	8.0		2.2	6010	11/13/93
Iron	9400	N*	8.9	6010	11/13/93
Nickel	12		3.6	6010	11/13/93
Lead	4.6	N	0.32	7421	11/12/93
Mercury	0.023	U	0.023	7471	11/07/93
Silver	0.28		0.89	6010	11/13/93
Zinc	19		1.8	6010	11/13/93

#### Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Page: 67 of 90

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1053

SAMPLE DATE: 10/25/93 16:25:00

SAMPLE MATRIX: SOIL

	Note Reporting			e Reporting Dat					
Test Name	_ Ref	Result	Limit	Units	Analyzed	Reference			
Chromium VI		0.500	0.50	MG/KG	11/05/93	EPA7196			

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1053
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		Re	eporting				Re	porting
	Result Qua	al	Limit		Result	Qual	•	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	1.3	J	10	1,1,2-Trichloroethane		5	U	5
Acetone	5.2	ВJ	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
1 1-Dichloroethane	5	U	5	Bromoform		5	U	5
ns-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	103	81 - 117
BROMOFLUOROBENZENE	97	74 - 121
1,2-DICHLOROETHANE-D4	108	70 - 120

## Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor

E - concentration exceeds calibration range

Page: 69 of 90

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1053 SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/01/93 ANALYSIS DATE: 11/13/93 DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	porting			F	Reporti
Re	esult	Qual	Limit		Result	Qual	Limit
Phone							
Phenol	0.330		0.330	2,6-Dinitrotoluene	0.330	_	0.330
bis(2-Chloroethyl)ether	0.330	_	0.330	3-Nitroaniline	0.825		0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330	_	0.330
1,3-Dichlorobenzene	0.330	_	0.330	2,4-Dinitrophenol	0.825		0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.825		0.825
Benzyl alcohol	0.330	_	0.330	Dibenzofuran	0.330	ט כ	0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.330	<b>U</b>	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	<b>U</b>	0.330
''s(2-Chloroisopropyl)ether	0.330	ט י	0.330	4-Chlorophenyl-phenylether	0.330	U (	0.330
<b>Methylphenol</b>	0.330	U	0.330	Fluorene	0.330	<b>U</b>	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	Ū	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	<b>U</b>	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U (	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	ט (	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	ט :	0.825
Benzoic Acid	0.330	σ	0.330	Phenanthrene	0.330	ט (	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	ט (	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	ט (	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330		0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	ט ו	0.330
4-Chloroaniline	0.330	σ	0.330	Butylbenzylphthalate	0.330		0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330		0.330
4-Chloro-3-methylphenol	0.330	υ	0.330	Benzo(a)anthracene	0.330		0.330
2-Methylnaphthalene	0.330	υ	0.330	Chrysene	0.330	_	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate		_	0.330
2,4,6-Trichlorophenol	0.330	บ	0.330	Di-n-octylphthalate	0.330		0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330		0.330	Benzo(k) fluoranthene	0.330		0.330
2-Nitroaniline	0.825	_	0.825	Benzo(a)pyrene	0.330	-	0.330
Dimethylphthalate	0.330	_	0.330	Indeno(1,2,3-cd)pyrene	0.330	_	0.330
Acenaphthylene	0.330	_	0.330	Dibenzo(a,h)anthracene	0.330	_	0.330
- •	,,,,,	•		Benzo(g,h,i)perylene	0.330		0.330
				(9/11/1/PCL ) Terre	0.550	-	0.000

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1053 SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	67	23 - 120				
2-Fluorobiphenyl	85	30 - 115				
Terphenyl-D14	70	18 - 137				
Phenol-D5	69	24 - 113				
2-Fluorophenol	58	25 - 121				
2,4,6-Tribromophenol	64	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

#### Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}\mbox{\ensuremath{-}}$  analyte is found in the associated blank as well as in the sample 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor

E - concentration exceeds calibration range

Page: 71 of 90

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

**AUSTIN, TX** (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1053

SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 106.382

UNITS: MG/KG

 						_
	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date	
Arsenic	5.0	n	3.7	7060	11/15/93	_
Aluminum	9100	N	21	6010	11/13/93	
Barium	760	N*	21	6010	11/13/93	
Beryllium	1.6		0.53	6010	11/13/93	
Cadmium	0.45		0.53	6010	11/13/93	
Chromium	13		1.1	6010	11/13/93	
Copper	8.0		2.7	6010	11/13/93	
Iron	11000	N*	11	6010	11/13/93	
Nickel	12		4.3	6010	11/13/93	
Lead	8.9	N	1.1	7421	11/12/93	
Mercury	0.023	σ	0.023	7471	11/07/93	
Silver	0.32		1.1	6010	11/13/93	
Zinc	16		2.1	6010	11/13/93	

#### Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

SAMPLE ID: A1054

SAMPLE DATE: 10/25/93 16:25:00

SAMPLE MATRIX: SOIL

	Note	Reporting			Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.500	0.50	MG/KG	11/05/93	EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: KPA8240

SAMPLE ID: A1054

SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

·		Re	eporting				Re	porting
	Result Qua	al	Limit		Result	Qua:	1	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	8.8	JB	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		LO	บ	10
1 1-Dichloroethane	5	U	5	Bromoform		5	U	5
ns-1,2-Dichloroethene	5	U	5	2-Hexanone	5	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	5	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	4.4	J	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	100	81 - 117
BROMOFLUOROBENZENE	97	74 - 121
1,2-DICHLOROETHANE-D4	113	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 802-6684

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1054
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/01/93 ANALYSIS DATE: 11/13/93 DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			F	Reportin
Re	esult	Qual	Limit		Result	Qual	Limit
Phone							
Phenol	0.330		0.330	2,6-Dinitrotoluene	0.330		0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.825		0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330		0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.825		0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.330	ט נ	0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	-	0.330	Diethylphthalate	0.330	U	0.330
۲ ۹(2-Chloroisopropyl)ether	0.330		0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
ethylphenol	0.330	U	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	υ	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	ט	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	ט	0.330
2,4-Dimethylphenol	0.330	ט י	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	ט י	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	ט	0.330	Fluoranthene	0.330	σ	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	ט	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330		0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330		0.330
2-Methylnaphthalene	0.330	σ	0.330	Chrysene	0.330		0.330
Hexachlorocyclopentadiene	0.330	υ	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330		0.330
2,4,5-Trichlorophenol	0.825		0.825	Benzo(b) fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330		0.330	Benzo(k)fluoranthene	0.330		0.330
2-Nitroaniline	0.825		0.825	Benzo(a)pyrene	0.330		0.330
Dimethylphthalate	0.330		0.330	Indeno(1,2,3-cd)pyrene	0.330		0.330
Acenaphthylene	0.330		0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330		0.330
				· · · · · · · · · · · · · · · · · · ·			

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1054
SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Surrogates ·	% Recovery	Limits					
Nitrobenzene-D5	70	23 - 120					
2-Fluorobiphenyl	81	30 - 115					
Terphenyl-D14	65	18 - 137					
Phenol-D5	66	24 - 113					
2-Fluorophenol	58	25 - 121					
2,4,6-Tribromophenol	62	19 - 122					

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work

Work Order: B3-10-336

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1054 SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 97.0873

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.87	UN	0.87	7060	11/12/93
Aluminum	8300	N	19	6010	11/13/93
Barium	530	N*	19	6010	11/13/93
Beryllium	1.6		0.49	6010	11/13/93
Cadmium	0.10		0.49	6010	11/13/93
Chromium	12		0.97	6010	11/13/93
Copper	8.4		2.4	6010	11/13/93
Iron	10000	N*	9.7	6010	11/13/93
Nickel	. 13		3.9	6010	11/13/93
Lead	8.8	N	1.0	7421	11/12/93
Mercury	0.020	U	0.020	7471	11/07/93
Silver	0.14		0.97	6010	11/13/93
Zinc	15		1.9	6010	11/13/93

# Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1055 SAMPLE DATE: 10/21/93 SAMPLE MATRIX: WATER ANALYSIS DATE: 11/01/93

DILUTION FACTOR: 1.0

UNITS: UG/L

	Result		Reporting Limit		Result	Qua		eporting Limit
Chloromethane	1	.0 1	J 10	1,2-Dichloropropane		5	บ	5
Bromomethane	1	.0	J 10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	1	.0 1	J 10	Trichloroethene		5	U	5
Chloroethane	1	0 1	J 10	Chlorodibromomethane		5	U	5
Methylene chloride	1	0 1	J 10	1,1,2-Trichloroethane		5	U	5
Acetone	10	0 1	J 100	Benzene		5	U	5
Carbon disulfide		5 1	J 5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5 1	J 5	2-Chloroethylvinyl ether		10	Ū	10
1 1-Dichloroethane		5 1	J 5	Bromoform		5	U	5
.ns-1,2-Dichloroethene		5 1	J 5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene		5 t	J 5	4-Methyl-2-pentanone	!	50	U	50
Chloroform		5 t	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5 τ	J 5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	0 τ	100	Toluene		5	U	5
1,1,1-Trichloroethane		5 t	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5 t	5	Ethylbenzene		5	U	5
Vinyl acetate	1	0 t	10	Styrene		5	Ū	5
Dichlorobromomethane		5 τ	J 5	Xvlenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	95	88 - 110
BROMOFLUOROBENZENE	104	86 - 115
1,2-DICHLOROETHANE-D4	108	76 - 114

- U none detected
- ${\tt J}$  estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

Page: 78 of 90

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: Grain Size Distriubtion METHOD REFERENCE: ASTN_D422

SAMPLE ID: J5420 SAMPLE DATE: 10/25/93 SAMPLE MATRIX: SOIL

Form not available.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: Moisture Content METHOD REFERENCE: ASTM_D216

SAMPLE ID: J5420

SAMPLE DATE: 10/25/93
SAMPLE MATRIX: SOIL

Form not available.

Page: 80 of 90

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method	
Test Name	<u>Ref</u>	Result	Limit	Units	Analyzed	Reference	
Chromium VI		0.0100	0.010	MG/KG	11/04/93	EPA7196	

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/04/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Re	porting
	Result Qua	1	Limit		Result	Qua.	l :	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	IJ	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	บ	10	1,1,2-Trichloroethane		5	U	5
Acetone	4.0	JB	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		LO	U	10
' 1-Dichloroethane	5	U	5	Bromoform		5	U	5
ns-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xvlenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	104	81 - 117
BROMOFLUOROBENZENE	98	74 - 121
1,2-DICHLOROETHANE-D4	105	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$  analyte is found in the associated blank as well as in the sample 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

# IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/01/93
ANALYSIS DATE: 11/13/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	porting			1	Reportin
	Result (	Qual	Limit		Result		Limit
Phenol	0.330		0.330	2,6-Dinitrotoluene	0.33	ט כ	0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.82	5 U	0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.33	ט כ	0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.82	ט פ	0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.82	T T	0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.330	<b>U</b>	0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.330	ט (	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	ט (	0.330
' (2-Chloroisopropyl)ethe		U	0.330	4-Chlorophenyl-phenylether	0.330	<b>U</b>	0.330
ethylphenol	0.330	U	0.330	Fluorene	0.330	U (	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	ט (	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	ט (	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	ט (	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	ט	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	ט ט	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	ט י	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	ט ו	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	ט (	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	ט ט	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	<b>ט</b>	0.330
Hexachlorobutadiene	0.330	ָ ט	0.330	3,3'-Dichlorobenzidine	0.330	υ	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	σ	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	υ	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	บ	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a) pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	บ	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	บ	0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	82	23 - 120				
2-Fluorobiphenyl	99	30 - 115				
Terphenyl-D14	82	18 - 137				
Phenol-D5	72	24 - 113				
2-Fluorophenol	61	25 - 121				
2,4,6-Tribromophenol	83	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

## Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$  analyte is found in the associated blank as well as in the sample 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor

E - concentration exceeds calibration range

Page: 84 of 90

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 1.0

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	บ	0.010	7060	11/12/93
Aluminum	0.20	U	0.20	6010	11/13/93
Barium	0.20	U	0.20	6010	11/13/93
Beryllium	0.0050	U	0.0050	6010	11/13/93
Cadmium	0.0050	บ	0.0050	6010	11/13/93
Chromium	0.010	U	0.010	6010	11/13/93
Copper	0.025	ប	0.025	6010	11/13/93
Iron	0.10	U	0.10	6010	11/13/93
Nickel	0.040	Ū	0.040	6010	11/13/93
Lead	0.0030	Ū	0.0030	7421	11/12/93
Mercury	0.00020	U	0.00020	7471	11/07/93
Silver	0.010	U	0.010	6010	11/13/93
Zinc	0.020	U	0.020	6010	11/13/93

## Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

SAMPLE MATRIX: WATER
ANALYSIS DATE: 11/01/93
DILUTION FACTOR: 1.0

UNITS: UG/L

		Rep	porting				Re	portino
	Result Qual	1 1	Limit		Result	Qual		-
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		_	Ū	5
Methylene chloride	4.2	J	10	1,1,2-Trichloroethane			Ū	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
1-Dichloroethane	5	U	5	Bromoform		5	U	5
.ns-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	9	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	4.1	J	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	95	88 - 110
BROMOFLUOROBENZENE	101	86 - 115
1,2-DICHLOROETHANE-D4	105	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

Page: 86 of 90

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-336

SAMPLE ID: LAB BLANK 2

SAMPLE DATE:

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	<u>Ref</u>	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.0100	0.010	MG/KG	11/05/93	EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-336

# Referenced notes for this work order:

B310336 18A J5420

GEOTECHNICAL DATA REPORTED UNDER SEPARATE COVER.

B310336 18B J5420

GEOTECHNICAL DATA REPORTED UNDER SEPARATE COVER.

Page: 88 of 90

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

#### IV. Methodology

Requested analyses were performed according to the following methods.

TEST NAME ICP Metals

TEST CODE 6010

Metals by ICP

Inductively coupled emission spectroscopy according to Method 6010, "Test Methods for Evaluating Solid Waste Physical/Chemical Methods", SW-846, Third Edition.

TEST NAME Hazardous Substance Vols. TEST CODE 8240TK

Hazardous Substance List Volatiles

Method 8240, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. GC/MS Purge and Trap analysis.

TEST NAME ABN HSL GC/MS Extractables TEST CODE 8270TK

Hazardous Substance List Extractables Method 8270, SW-846, Test Methods for Evaluating Solid Waste, Third Edition. Acid/Base-Neutral extraction followed by GC/MS analysis.

TEST NAME Arsenic - Graphite Furnace TEST CODE AS GF

Arsenic

Graphite Furnace Method 7060, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. EPA 206.2-Technical Additions to Methods for Chemical Analysis of Water and Wastes, EPA-600/4-82-055, December 1982.

TEST NAME Cation Exchange Capacity TEST CODE CEC A

Cation exchange

Capacity

Part 2: Chemical and microbiological properties method 57-3. American Society of Agronomy, Methods of soil Analysis 2nd Edition.

TEST NAME Chromium VI

TEST CODE CR VI

Chromium VI

Method 7196, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Colorimetric analysis. Equivalent to Standard Methods 3500-Cr D.

Page: 89 of 90

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-336

TEST NAME Grain Size Distribtion

TEST CODE GRAIN

Method not available.

TEST NAME Mercury

TEST CODE HG AA

Mercury

Method 7471, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Cold vapor atomic absorption.

Method 7470 is used for water.

Method 245.5-"Technical Additions to Methods for

Chemical Analysis of Water and Wastes,"

EPA-600/4-82-055, December 1982.

TEST NAME Metals

TEST CODE ICPTK2

Method not available.

TEST NAME Moisture Content

TEST CODE MOIS G

Method not available.

TEST NAME Lead - Graphite Furnace

TEST CODE PB GF

Lead

EPA 7421, SW-846, Test Methods for Evaluating Solid

Graphite

Wastes, Third Edition.

Furnace

EPA 239.2-Technical Additions to Methods for Chemical

Analysis of Water and Wastes, " EPA-600/4-82-055,

December 1982.

TEST NAME Vertical Permeability TEST CODE V_PERM

Method not available.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 Work Ord

(512) 892-6684 Work Order: B3-10-336

TEST NAME GFAA Digestion - Soil

TEST CODE 23050F

Soil Digestion

Method 3050, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for Graphite Furnace/Flame AA analysis.

TEST NAME ICPES Digestion - Soil

TEST CODE 23050P

Soil Digestion

Method 3050, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for ICPES analysis. Equivalent to Method 3050A, SW-846 Update I, July 1992.

TERNATIONAL THINOLOGY AND PRIZE 103.61

ANALYSIS R JEST AND CHAIN OF CUSTOOY RECORD*

Samples Shipment Date 7 10-75-53

Ker A/B-15001

Sample Team Members 22 Kyl

Project Name/No. +

 $\begin{array}{c} \beta \not \leq \ell \circ \not \leq \not \swarrow \\ \text{Reference Document N} & 313510 \\ \text{Page 1 of } \overrightarrow{3} \end{array}$ 

Bill to: 5 40/832-03.0 Lab Destination 8 TTAS-ASTV Report to: 10 Jim Jennings

White: To accompany samples

Carrier/Waybill No. 13 8460756415 Lab Contact 9 Karman Dearle Project Contact/Phone 12 has 336-8368 Purchase Order No. 6 402832, 03. 0] 5001 Project Manager 4 Thuny Toylor Pröfit Center No. 3

2 ONE CONTAINER PER LINE **P.** 19 Date/Time ¹⁶ Container Required Report Date 11/5 Days

Disposal ²² Record No. Lokilsi 1700L G32 4412 Condition on 600342 RUR Receipt 500872. (WO/NO) 82th. 600 From Requested Testing 20 Program 8210 828 8240 8270. 8210 servative <u>8</u> Volume 125 m 11110 10-25-93 17-01 10-25-8 Collected 10-25-83 10-25-93 Sample 15 Description/Type rio Blank Special Instructions: 23 Sample ¹⁴ Number 41042 A1042 A1043 41043 140/4 41044 4044

Yellow: Field copy

Possible Hazard Identification: 24		,	Sample Disposal: ²⁵	•		
Non-hazard L Flammable L Skin Irritant L Poison B L		Unknown	Return to Client   Disposal by Lab X	Lab	Archive	(mos.)
Turnaroynd Time Required: ²⁶	QC Level: 27	: 27				
Normal XI Rush			Project Spacific (specify):			
1. Relinquished by ²⁸ , // / // //	Date: 76-75-83	1. Rec	1		Date: 10/26/5	
(Signature/Affiliation)	_Time: /820	(Signature/	(Signature/Affiliation)		Time: 0522	
2. Relinquished by	Date:	2. Rec	2. Received by		Date:	
(Signature/Affiliation)	Time:	(Signature/Affiliation)	Affiliation)		Time:	

Date: Time:

3. Received by (Signature/Affiliation)

Date: Time:

*See back of form for special instructions

Comments: 29

3. Relinquished by (Signature/Affiliation)

TERNATIONAL . ¿CHNOLOGY CORPORATION Project, Name 77

ANALYSIS R. JEST AND CHAIN OF CUSTODY RECORD (cont.)*

63 (0 378 K Reference Document No. 31351 Page 2 of 3

Project No. 702837, 03 6

Samples Shipment Date  $10^{-25-9}$  3

White: To accompany samples

Yellow: Field copy

*See back of form for special instructions

ONE CONTAINER PER LINE
Sample 18 pre-19 Volume servative
394 COL
125ml
SZCO.
125 m
1/1/25

White: To accompany samples Yellow: Field copy *See back of form for special instructions Disposal 22 Record No. Samples Shipment Date 10 % 75 % 3Reference Document No.  $\frac{2}{2}$ عجت 227 -<u>.</u> Condition on 21 Receipt Gas, aux, you 20 EPA 9100 VECT ASTM 0-477, 0216 EPA 9081 Requested Testing ONE CONTAINER PER LINE ANALYSIS RI JEST AND CHAIN OF CUSTODY RECORD (cont.)* Project No. 408532.03.0 Pre-19 servative 300 Container 17 Sample 18
Type Volume St. Stere Date/Time 16 Collected 10-25-63 6256 641-03 :<u>:</u>: ÷ ્રફ . 35 ع)زد TERNATIONAL > ٠ 5. 0.31 CORPORATION Project Name Sample 14 Number 4/058

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
02B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	87.7
	Chromium VI	B310336-19B	1104CR VI1	11/04/93	11/04/93	10.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	110
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	87.7

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
03B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	116
	Chromium VI	B310336-19B	1104CR_VI1	11/04/93	11/04/93	10.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	• •	109
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	116

## Auxiliary Data Summary 12/03/93

Work order : B310336

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
04B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	111
	Chromium VI	B310336-19B	1104CR_VI1	11/04/93	11/04/93	10.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	115
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	111

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
05B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	103
	Chromium VI	B310336-19B	1104CR_VI1	11/04/93	11/04/93	10.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	111
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	103

## Auxiliary Data Summary 12/03/93

Work order : B310336

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
06B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	94.3
	Chromium VI	B310336-19B	1104CR VI1	11/04/93	11/04/93	10.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	108
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	94.3

## Auxiliary Data Summary 12/03/93

Work order : B310336

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
07B			-			
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	85.5
	Chromium VI	B310336-19B	1104CR VI	11/04/93	11/04/93	10.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	112
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	85.5

Sample ID : A1047-MS

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
08B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	103
	Chromium VI	B310336-21A	1105CR_VI1	11/05/93	11/05/93	50.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	120
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	103

Sample ID : A1047-MSD

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
09B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	104
	Chromium VI	B310336-21A	1105CR_VI1	11/05/93	11/05/93	50.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	115
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	104

## Auxiliary Data Summary 12/03/93

Work order : B310336

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
10B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	112
	Chromium VI	B310336-21A	1105CR_VI1	11/05/93	11/05/93	50.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	100
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	112

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
11B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	86.2
	Chromium VI	B310336-21A	1105CR_VI1	11/05/93	11/05/93	50.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	112
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	345

# Auxiliary Data Summary 12/03/93

Work order : B310336

FRAC	Blank Tests Reference		Batch ID	Prep Analysis Date Date		Dil. Factor	
12B							
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	85.5	
	Chromium VI	B310336-21A	1105CR_VI1	11/05/93	11/05/93	10.0	
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	119	
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	342	

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
13B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	348
	Chromium VI	B310336-21A	1105CR VI1	11/05/93	11/05/93	50.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	108
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	348

## Auxiliary Data Summary 12/03/93

Work order : B310336

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
14B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	106
	Chromium VI	B310336-21A	1105CR VI1	11/05/93	11/05/93	50.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	114
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	106

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
15B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/16/93	367
	Chromium VI	B310336-21A	1105CR VI1	11/05/93	11/05/93	50.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	115
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	367

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
16B				3.00		
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	87
	Chromium VI	B310336-21A	1105CR_VI1	11/05/93	11/05/93	50.0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	101
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	348

Sample ID : LAB BLANK #1

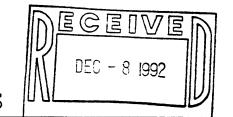
FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
19B						
	Arsenic	B310336-19B	11103050F1	11/10/93	11/12/93	1.0
	Chromium VI	B310336-19B	1104CR_VI1	11/04/93	11/04/93	1:0
	Mercury	B310336-19B	1107HGAA1	11/07/93	11/07/93	1.0
	Lead	B310336-19B	11103050F1	11/10/93	11/12/93	1.0

Sample ID : LAB BLANK 2

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
21A	Chromium VI	B310339-21A	1105CR_VI1	11/05/93	11/05/93	1.0



# ANALYTICAL SERVICES



Date: 12/07/93

## CERTIFICATE OF ANALYSIS

IT CORPORATION
1250 CAPITAL OF TX HWY
BLDG. 3, SUITE 200
AUSTIN, TX 78746-6443
TIM JENNINGS

Work Order: B3-10-382

This is the Certificate of Analysis for the following samples:

Client Work ID: D.O.5001 Date Received: 10/27/93 Number of Samples: 14

Sample Type: SOIL/WATER

409832-003-01

#### I. Introduction

Samples were labeled as follows:

SAMPLE IDENTIFICATION	LABORATORY #
A1058	B3-10-382-01
A1059	B3-10-382-02
A1060	B3-10-382-03
A1060-MS	B3-10-382-04
A1060-MSD	B3-10-382-05
A1061	B3-10-382-06
A1062	B3-10-382-07
A1063	B3-10-382-08
A1064	B3-10-382-09
A1065	B3-10-382-10
A1056	B3-10-382-11
A1057	B3-10-382-12
LAB BLANK	B3-10-382-13

Reviewed and Approved:

Jon Bartell Laboratory Director

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

Page: 2 of 69

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-382

Samples, continued from above:

SAMPLE IDENTIFICATION

LABORATORY #

LAB BLANK

B3-10-382-14

#### II. QA/QC

The results presented in this report meet the statement of work requirements in accordance with Quality Control and Quality Assurance protocol except as noted in Section IV or in an optional sample narrative at the end of Section III.

In the presented analytical data, 'ND' or '<' indicates that the compound is not detected at the specified limit.

#### III. Analytical Data

The following page(s) supply results for requested analyses performed on the samples listed above.

The test results relate to tested items only. ITAS-Austin reserves the right to control report production except in whole.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-382

SAMPLE ID: A1058

SAMPLE DATE: 10/26/93 08:50:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date Method
Test Name	Ref	Result	Limit	Units	Analyzed Reference
	_ ====	0.100		MG/KG	11/05/93 EPA7196
Chromium VI		0.100	0.10	110 / 110	

Page: 4 of 69

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1058

SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

·		R	eporting				Re	porting
	Result Qua	al	Limit		Result	Qual	•	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	บ	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	10	JВ	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
`-Dichloroethane	5	U	5	Bromoform		5	U	5
_ns-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xvlenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	110	81 - 117
BROMOFLUOROBENZENE	96	74 - 121
1,2-DICHLOROETHANE-D4	110	70 - 120

#### Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1058
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/03/93
ANALYSIS DATE: 11/06/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			F	Reporti
•	sult		Limit		Result	Qual	Limit
		_				_	
Phenol	0.330	ט כ	0.330	2,6-Dinitrotoluene	0.330	<b>U</b>	0.330
bis(2-Chloroethyl)ether	0.330	ט כ	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	ט כ	0.330	Acenaphthene	0.330	U (	0.330
1,3-Dichlorobenzene	0.330	ט כ	0.330	2,4-Dinitrophenol	0.82	U	0.825
1,4-Dichlorobenzene	0.330	ט כ	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	ט כ	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	ט כ	0.330	2,4-Dinitrotoluene	0.330	<b>U</b>	0.330
2-Methylphenol	0.330	ט כ	0.330	Diethylphthalate	0.330	U (	0.330
(2-Chloroisopropyl)ether	0.330	ט כ	0.330	4-Chlorophenyl-phenylether	0.330	υ (	0.330
<pre>.ethylphenol</pre>	0.330	ט כ	0.330	Fluorene	0.330	<b>U</b>	0.330
N-Nitroso-di-n-propylamine	0.330	ט כ	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	ט כ	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	ט כ	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	ט כ	0.330	4-Bromophenyl-phenylether	0.330	ט (	0.330
2-Nitrophenol	0.330	ט כ	0.330	Hexachlorobenzene	0.330	U (	0.330
2,4-Dimethylphenol	0.330	ט כ	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	ט כ	0.330	Phenanthrene	0.330	ט ס	0.330
bis(2-Chloroethoxy)methane	0.330	ט כ	0.330	Anthracene	0.330	<b>U</b>	0.330
2,4-Dichlorophenol	0.330	ט כ	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	ט כ	0.330	Fluoranthene	0.330	υ (	0.330
Naphthalene	0.330	ט כ	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	ט כ	0.330	Butylbenzylphthalate	0.330	U (	0.330
Hexachlorobutadiene	0.330	ט כ	0.330	3,3'-Dichlorobenzidine	0.330	ט (	0.330
4-Chloro-3-methylphenol	0.330	ט כ	0.330	Benzo(a)anthracene	0.330	ט (	0.330
2-Methylnaphthalene	0.330		0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	ט כ	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	ט כ	0.330	Di-n-octylphthalate	0.330	U	0.330
2,4,5-Trichlorophenol	0.825	<b>U</b>	0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	ט כ	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	5 U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330		0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	<b>U</b>	0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1058
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	78	23 - 120				
2-Fluorobiphenyl	78	30 - 115				
Terphenyl-D14	77	18 - 137				
Phenol-D5	81	24 - 113				
2-Fluorophenol	70	25 - 121				
2,4,6-Tribromophenol	81	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

#### Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-382

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1058

SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 105.263

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	3.1		0.91	7060	11/15/93
Aluminum	13000	N	21	6010	11/13/93
Barium	210	N*	21	6010	11/13/93
Beryllium	0.92		0.53	6010	11/13/93
Cadmium	0.57		0.53	6010	11/13/93
Chromium	12		1.1	6010	11/13/93
Copper	8.2	N	2.6	6010	11/13/93
Iron	12000	N	11	6010	11/13/93
Nickel	10		4.2	6010	11/13/93
Lead	11	N	1.1	7421	11/15/93
Mercury	0.024	U	0.024	7471	11/15/93
Silver	0.57		1.1	6010	11/13/93
Zinc	21		2.1	6010	11/13/93

#### Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Page: 8 of 69

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-382

SAMPLE ID: A1059

SAMPLE DATE: 10/26/93 09:00:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.500	0.50	MG/KG	11/05/93	EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1059
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

ANALYSIS DATE: 11/05/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

•		Re	eporting				Re	porting
	Result Qua	1	Limit		Result	Qual	-	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	190	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1 1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
-Dichloroethane	5	U	5	Bromoform		5	U	5
ans-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	<pre>% Recovery</pre>	Limits				
TOLUENE-D8	107	81 - 117				
BROMOFLUOROBENZENE	102	74 - 121				
1,2-DICHLOROETHANE-D4	108	70 - 120				

#### Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1059
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/03/93
ANALYSIS DATE: 11/06/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	porting				Reporti
	Result	Qual	Limit		Result	Qual	Limit
Phenol	0.33	-	0.330	2,6-Dinitrotoluene	0.33	_	0.330
bis(2-Chloroethyl)ether	0.33		0.330	3-Nitroaniline	0.82	-	0.825
2-Chlorophenol	0.33		0.330	Acenaphthene	0.33		0.330
1,3-Dichlorobenzene	0.33		0.330	2,4-Dinitrophenol	0.82		0.825
1,4-Dichlorobenzene	0.33	ט ט	0.330	4-Nitrophenol	0.82	-	0.825
Benzyl alcohol	0.33	ט כ	0.330	Dibenzofuran	0.330		0.330
1,2-Dichlorobenzene	0.33	ט כ	0.330	2,4-Dinitrotoluene	0.330		0.330
2-Methylphenol	0.33	ט כ	0.330	Diethylphthalate	0.330		0.330
<pre>3(2-Chloroisopropyl)ethe</pre>	r 0.33	ט כ	0.330	4-Chlorophenyl-phenylether	0.330		0.330
<b>Methylphenol</b>	0.33	ט כ	0.330	Fluorene	0.330		0.330
N-Nitroso-di-n-propylamine	0.33	ט כ	0.330	4-Nitroaniline	0.82	5 U	0.825
Hexachloroethane	0.33	ט כ	0.330	4,6-Dinitro-2-methylphenol	0.82	5 U	0.825
Nitrobenzene	0.33	ט כ	0.330	N-Nitrosodiphenylamine (1)	0.330	ט כ	0.330
Isophorone	0.33	ט ס	0.330	4-Bromophenyl-phenylether	0.330		0.330
2-Nitrophenol	0.33		0.330	Hexachlorobenzene	0.33	ט כ	0.330
2,4-Dimethylphenol	0.33	0 U	0.330	Pentachlorophenol	0.82	5 U	0.825
Benzoic Acid	0.33	0 U	0.330	Phenanthrene	0.33		0.330
bis(2-Chloroethoxy)methane	0.33	0 U	0.330	Anthracene	0.33	ט כ	0.330
2,4-Dichlorophenol	0.33	0 U	0.330	Di-n-butylphthalate	0.33	ט כ	0.330
1,2,4-Trichlorobenzene	0.33	0 U	0.330	Fluoranthene	0.33	ט כ	0.330
Naphthalene	0.33	υ 0	0.330	Pyrene	0.33	ט כ	0.330
4-Chloroaniline	0.33	0 U	0.330	Butylbenzylphthalate	0.33	ט כ	0.330
Hexachlorobutadiene	0.33	υ <b>υ</b>	0.330	3,3'-Dichlorobenzidine	0.33	ט כ	0.330
4-Chloro-3-methylphenol	0.33	0 U	0.330	Benzo(a)anthracene	0.33	ט כ	0.330
2-Methylnaphthalene	0.33	ט ט	0.330	Chrysene	0.33	ט כ	0.330
Hexachlorocyclopentadiene	0.33	0 ប	0.330	bis(2-Ethylhexyl)phthalate	0.33	ט כ	0.330
2,4,6-Trichlorophenol	0.33	υ 0	0.330	Di-n-octylphthalate	0.33	ט כ	0.330
2,4,5-Trichlorophenol	0.82	5 U	0.825	Benzo(b)fluoranthene	0.33	ט כ	0.330
2-Chloronaphthalene	0.33	0 U	0.330	Benzo(k)fluoranthene	0.33	ט כ	0.330
2-Nitroaniline	0.82	5 ซ	0.825	Benzo(a)pyrene	0.33	ט כ	0.330
Dimethylphthalate	0.33	0 U	0.330	Indeno(1,2,3-cd)pyrene	0.330	ט כ	0.330
Acenaphthylene	0.33	0 U	0.330	Dibenzo(a,h)anthracene	0.33	ט כ	0.330
				Benzo(g,h,i)perylene	0.33	ט כ	0.330

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1059

SAMPLE DATE: 10/26/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	76	23 - 120				
2-Fluorobiphenyl	76	30 - 115				
Terphenyl-D14	84	18 - 137				
Phenol-D5	81	24 - 113				
2-Fluorophenol	69	25 - 121				
2,4,6-Tribromophenol	82	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

#### Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
  - * Surrogate recovery is outside QC limit
    - D compound identified at a secondary dilution factor
    - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1059

SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 114.942

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.4		1.0	7060	11/15/93
Aluminum	8400	N	23	6010	11/13/93
Barium	210	N*	23	6010	11/13/93
Beryllium	0.86		0.57	6010	11/13/93
Cadmium	1.5		0.57	6010	11/13/93
Chromium	12		1.1	6010	11/13/93
Copper	7.8	N	2.9	6010	11/13/93
Iron	16000	N	11	6010	11/13/93
Nickel	15		4.6	6010	11/13/93
Lead	4.9	N	0.31	7421	11/15/93
Mercury	0.027	U	0.027	7471	11/15/93
Silver	0.41		1.1	6010	11/13/93
Zinc	17		2.3	6010	11/13/93

## Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- ${\tt N}$  spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

SAMPLE ID: A1060

SAMPLE DATE: 10/26/93 09:10:00

SAMPLE MATRIX: SOIL

	Note Reporting				Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.500	0.50	MG/KG	11/05/93	EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1060 SAMPLE DATE: 10/26/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 11/05/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

			eporting			ъ	070mt i
	Result Q	ual	Limit		Result Q		eporting Limit
Chloromethane	10	บ	10	1,2-Dichloropropane	_		_
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	<b>U</b>	•
Vinyl chloride	10	U	10	Trichloroethene		U	•
Chloroethane	10	U	10	Chlorodibromomethane	5	U	•
Methylene chloride	10	U	10	1,1,2-Trichloroethane	5	U	•
Acetone	9.6	JВ	100	Benzene	5	<u>U</u>	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	<u>U</u>	5
1,1-Dichloroethene	5	Ū	5	2-Chloroethylvinyl ether	5	Ū	5
-Dichloroethane	5	U	5	Bromoform	10 5	Ū	10
ns-1,2-Dichloroethene	5	U	5	2-Hexanone	50	U	5
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	50	U U	50 50
Chloroform	5	U	5	Tetrachloroethene	50	ប	50 5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane	5	ט	•
2-Butanone	4.2	JB	100	Toluene	5	Ū	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene	5	บ	5
Vinyl acetate	10	U	10	Styrene	5	U	5 E
Dichlorobromomethane	5	U	5	Xylenes, total	5	11	5 E

Surrogates	% Recovery	Limits
TOLUENE-D8	105	81 - 117
BROMOFLUOROBENZENE	101	74 - 121
1,2-DICHLOROETHANE-D4	110	70 - 120

## Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
- - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1060 SAMPLE DATE: 10/26/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/03/93
ANALYSIS DATE: 11/06/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			I	Reporti
Re	esult		Limit		Result		Limit
						*	
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330
(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
.4ethylphenol	0.330	U	0.330	Fluorene	0.330		0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825		0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol			0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)			0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	บ	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330		0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	บ	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330		0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330		0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330		0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330		0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330		0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330		0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330		0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330		0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330		0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate			0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330		0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b) fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330		0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330		0.330
Dimethylphthalate	0.330	บ	0.330	Indeno(1,2,3-cd)pyrene	0.330	-	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330		0.330

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1060 SAMPLE DATE: 10/26/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	72	23 - 120
2-Fluorobiphenyl	70	30 - 115
Terphenyl-D14	77	18 - 137
Phenol-D5	76	24 - 113
2-Fluorophenol	66	25 - 121
2,4,6-Tribromophenol	75	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

### Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$  analyte is found in the associated blank as well as in the sample 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

Page: 17 of 69

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1060

SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 114.942

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.2		1.1	7060	11/15/93
Aluminum	5800	N	23	6010	11/13/93
Barium	330	N*	23	6010	11/13/93
Beryllium	0.50		0.57	6010	11/13/93
Cadmium	0.58		0.57	6010	11/13/93
Chromium	8.8		1.1	6010	11/13/93
Copper	5.8	N	2.9	6010	11/13/93
Iron	6500	N	11	6010	11/13/93
Nickel	9.8		4.6	6010	11/13/93
Lead	5.1	N	0.32	7421	11/15/93
Mercury	0.021	υ	0.021	7471	11/15/93
Silver	0.33		1.1	6010	11/13/93
Zinc	15		2.3	6010	11/13/93

# Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance</p>
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

# Referenced notes for these results:

Duplicate analysis outside control limits due to matrix interference on barium analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684 409832-003-01 Work Order: B3-10-382

SAMPLE ID: A1060-MS

SAMPLE DATE: 10/26/93 09:10:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date Method
Test Name	Ref	Result	Limit	Units	Analyzed Reference
Chromium VI		100		% REC	11/05/93 EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-382

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1060-MS
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0

UNITS: % REC

Result					
1,1-Dichloroethene	79	Trichloro	ethene	87	
		Benzene		94	
		Toluene		100	
		Chloroben	zene	102	
	Surrogates	% Recovery	Limits		
	TOLUENE-D8	108	81 - 117		
	BROMOFLUOROBENZENE	104	74 - 121		
	1,2-DICHLOROETHANE-D4	109	70 - 120		

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1060-MS **SAMPLE DATE: 10/26/93** SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/03/93 ANALYSIS DATE: 11/06/93 DILUTION FACTOR: 0.033

UNITS: % REC

R	Result		
Phenol	81	3-Nitroaniline	69
2-Chlorophenol	87	2,4-Dinitrophenol	72
1,4-Dichlorobenzene	93	Pentachlorophenol	90
N-Nitroso-di-n-propylamine	84	Pyrene	97
1,2,4-Trichlorobenzene	95	_	
4-Chloro-3-methylphenol	84		
Acenaphthylene	89		

Surrogates	% Recovery	Limits
Nitrobenzene-D5	79	23 - 120
2-Fluorobiphenyl	72	30 - 115
Terphenyl-D14	80	18 - 137
Phenol-D5	69	24 - 113
2-Fluorophenol	70	25 - 121
2,4,6-Tribromophenol	84	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1060-MS
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 84.0336

UNITS: % REC

	Result	Method Reference	Analysis Date
Arsenic	86	7060	11/16/93
Aluminum	672 <i>‡</i>	6010	11/13/93
Barium	391#	6010	11/13/93
Beryllium	85	6010	11/13/93
Cadmium	88	6010	11/13/93
Chromium	90	6010	11/13/93
Copper	92	6010	11/13/93
Iron	335	6010	11/13/93
Nickel	90	6010	11/13/93
Lead	105	7421	11/15/93
Mercury	106	7471	11/15/93
Silver	87	6010	11/13/93
Zinc	84	6010	11/13/93

#### Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance</p>
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

# Referenced notes for these results:

#Matrix spike and % RPD for matrix spikes outside control limits due to matrix interference on aluminum and barium analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

% RPD for matrix spikes outside control limits due to matrix interference on copper analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684

409832-003-01 Work Order: B3-10-382

SAMPLE ID: A1060-MSD

SAMPLE DATE: 10/26/93 09:10:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	 Analyzed	Reference
Chromium VI		104		% REC	11/05/93	EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1060-MSD SAMPLE DATE: 10/26/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 11/05/93

DILUTION FACTOR: 1.0

UNITS: % REC

	Result			Result
1,1-Dichloroethene	87	Trichloro	ethene	93
		Benzene		103
		Toluene		113
		Chloroben	zene	110
	Surrogates	% Recovery	Limits	
	TOLUENE-D8	108	81 - 117	
	BROMOFLUOROBENZENE	103	74 - 121	
	1,2-DICHLOROETHANE-D4	110	70 - 120	

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1060-MSD SAMPLE DATE: 10/26/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/03/93
ANALYSIS DATE: 11/06/93
DILUTION FACTOR: 0.033

UNITS: % REC

Result					
Phenol	79	Acenaphthene	87		
2-Chlorophenol	82	4-Nitrophenol	67		
1,4-Dichlorobenzene	86	2,4-Dinitrotoluene	71		
N-Nitroso-di-n-propylamine	80	Pentachlorophenol	77		
1,2,4-Trichlorobenzene	87	Pyrene	90		
4-Chloro-3-methylphenol	79	-			

Surrogates	% Recovery	Limits
Nitrobenzene-D5	70	23 - 120
2-Fluorobiphenyl	69	30 - 115
Terphenyl-D14	73	18 - 137
Phenol-D5	69	24 - 113
2-Fluorophenol	67	25 - 121
2,4,6-Tribromophenol	7 <b>7</b>	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}\mbox{\ensuremath{-}}$  analyte is found in the associated blank as well as in the sample 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01⁽⁵¹²⁾ 892-6684 Work Order: B3-10-382

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1060-MSD SAMPLE DATE: 10/26/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 97.0873

UNITS: % REC

	Result	Method Reference	Analysis Date
Arsenic	91	7060	11/16/93
Aluminum	500#	6010	11/13/93
Barium	49#	6010	11/13/93
Beryllium	87	6010	11/13/93
Cadmium	91	6010	11/13/93
Chromium	91	6010	11/13/93
Copper	112	6010	11/13/93
Iron	295	6010	11/13/93
Nickel	90	6010	11/13/93
Lead	35	7421	11/15/93
Mercury	102	7471	11/15/93
Silver	89	6010	11/13/93
Zinc	86	6010	11/13/93

#### Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance</p>
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

# Referenced notes for these results:

#Matrix spike and % RPD for matrix spikes outside control limits due to matrix interference on aluminum and barium analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

% RPD for matrix spikes outside control limits due to matrix interference on copper analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

SAMPLE ID: A1061

SAMPLE DATE: 10/26/93 09:15:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.500	0.50	MG/KG	11/05/93	EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work 0-3 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1061 SAMPLE DATE: 10/26/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 11/06/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Re	porting
	Result Q	ual	Limit		Result	Qua]	L	Limit
Chloromethane	10	ט	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	1.1	JB	10	1,1,2-Trichloroethane		5	U	5
Acetone	11	JB	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1.1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
-Dichloroethane	5	U	5	Bromoform		5	U	5
_ans-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	Ū	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xvlenes, total		5	IJ	5

Surrogates	% Recovery	Limits
TOLUENE-D8	106	81 - 117
BROMOFLUOROBENZENE	103	74 - 121
1,2-DICHLOROETHANE-D4	108	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
  - - * Surrogate recovery is outside QC limit
    - D compound identified at a secondary dilution factor
    - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1061 SAMPLE DATE: 10/26/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/03/93 ANALYSIS DATE: 11/06/93 DILUTION FACTOR: 0.033

UNITS: MG/KG Reporting Reportin Result Qual Limit Result Qual Limit Phenol 0.330 U 0.330 2,6-Dinitrotoluene 0.330 U 0.330 bis(2-Chloroethyl)ether 0.330 U 0.330 3-Nitroaniline 0.825 U 0.825 2-Chlorophenol 0.330 U 0.330 Acenaphthene 0.330 U 0.330 1,3-Dichlorobenzene 0.330 U 0.330 2,4-Dinitrophenol 0.825 U 0.825 1,4-Dichlorobenzene 0.330 U 0.330 4-Nitrophenol 0.825 U 0.825 Benzyl alcohol 0.330 U 0.330 Dibenzofuran 0.330 U 0.330 1,2-Dichlorobenzene 0.330 U 0.330 2,4-Dinitrotoluene 0.330 U 0.330 2-Methylphenol 0.330 U 0.330 Diethylphthalate 0.330 U 0.330 (2-Chloroisopropyl)ether 0.330 U 0.330 4-Chlorophenyl-phenylether 0.330 U 0.330 **Methylphenol** 0.330 U 0.330 Fluorene 0.330 U 0.330 N-Nitroso-di-n-propylamine 0.330 U 0.330 4-Nitroaniline 0.825 U 0.825 Hexachloroethane 0.330 U 0.330 4,6-Dinitro-2-methylphenol 0.825 U 0.825 Nitrobenzene 0.330 U 0.330 N-Nitrosodiphenylamine (1) 0.330 U 0.330 Isophorone 0.330 U 0.330 4-Bromophenyl-phenylether 0.330 U 0.330 2-Nitrophenol 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 2,4-Dimethylphenol 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 bis(2-Chloroethoxy)methane 0.330 U 0.330 Anthracene 0.330 U 0.330 2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.330 1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Pyrene 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 Hexachlorobutadiene 0.330 U 0.330 3,3'-Dichlorobenzidine 0.330 U 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330 2,4,6-Trichlorophenol 0.330 U 0.330 Di-n-octylphthalate 0.330 U 0.330 2,4,5-Trichlorophenol 0.825 U 0.825 Benzo(b) fluoranthene 0.330 U 0.330 2-Chloronaphthalene 0.330 U 0.330 Benzo(k)fluoranthene 0.330 U 0.330 2-Nitroaniline 0.825 U 0.825 Benzo(a)pyrene 0.330 U 0.330 Dimethylphthalate 0.330 U 0.330 Indeno(1,2,3-cd)pyrene 0.330 U 0.330 Acenaphthylene 0.330 U 0.330 Dibenzo(a,h)anthracene 0.330 U 0.330 Benzo(g,h,i)perylene 0.330 U 0.330

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work 0-34

Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1061

SAMPLE DATE: 10/26/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	76	23 - 120				
2-Fluorobiphenyl	74	30 - 115				
Terphenyl-D14	83	18 - 137				
Phenol-D5	77	24 - 113				
2-Fluorophenol	68	25 - 121				
2,4,6-Tribromophenol	82	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1061

SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 84.0336

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	3.9		0.84	7060	11/15/93
Aluminum	9700	N	17	6010	11/13/93
Barium	930	N*	17	6010	11/13/93
Beryllium	0.83		0.42	6010	11/13/93
Cadmium	0.70		0.42	6010	11/13/93
Chromium	16		0.84	6010	11/13/93
Copper	9.3	N	2.1	6010	11/13/93
Iron	16000	N	8.4	6010	11/13/93
Nickel	13		3.4	6010	11/13/93
Lead	10	N	1.0	7421	11/15/93
Mercury	0.020	U	0.020	7471	11/15/93
Silver	0.67		0.84	6010	11/13/93
Zinc	18		1.7	6010	11/13/93

## Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684 409832-003-01 Work Order: B3-10-382

SAMPLE ID: A1062

SAMPLE DATE: 10/26/93 14:15:00

SAMPLE MATRIX: SOIL

	Note	Reporting			Date	Method
Test_Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.100	0.10	MG/KG	11/05/93	EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1062 SAMPLE DATE: 10/26/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 11/06/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

	Result Qu		eporting		Dogula	0		porting
	Nesure Qu	laı	DIMITC		Result	Qua	LI	Limit
Chloromethane	10	บ	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	Ū	5
Methylene chloride	0.6	JВ	10	1,1,2-Trichloroethane		5	Ū	5
Acetone	18	JВ	100	Benzene		5	Ū	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1.1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
-Dichloroethane	5	U	5	Bromoform		5	U	5
<pre>ans-1,2-Dichloroethene</pre>	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	5	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	3.4	JB	100	Toluene		5	Ū	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits				
TOLUENE-D8	111	81 - 117				
BROMOFLUOROBENZENE	95	74 - 121				
1,2-DICHLOROETHANE-D4	110	70 - 120				

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$  analyte is found in the associated blank as well as in the sample
- 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1062 SAMPLE DATE: 10/26/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/03/93 ANALYSIS DATE: 11/06/93 DILUTION FACTOR: 0.033

UNITS: MG/KG Reporting Reportin Result Qual Limit Result Qual Limit Phenol 0.330 U 0.330 2,6-Dinitrotoluene 0.330 U 0.330 bis(2-Chloroethyl)ether 0.330 U 0.330 3-Nitroaniline 0.825 U 0.825 2-Chlorophenol 0.330 U 0.330 Acenaphthene 0.330 U 0.330 1,3-Dichlorobenzene 0.330 U 0.330 2,4-Dinitrophenol 0.825 U 0.825 1,4-Dichlorobenzene 0.330 U 0.330 4-Nitrophenol 0.825 U 0.825 Benzyl alcohol 0.330 U 0.330 Dibenzofuran 0.330 U 0.330 1,2-Dichlorobenzene 0.330 U 0.330 2,4-Dinitrotoluene 0.330 U 0.330 2-Methylphenol 0.330 U 0.330 Diethylphthalate U 0.330 0.330 '(2-Chloroisopropyl)ether 0.330 U 0.330 4-Chlorophenyl-phenylether 0.330 U 0.330 ethylphenol. 0.330 U 0.330 Fluorene 0.330 U 0.330 N-Nitroso-di-n-propylamine 0.330 U 0.330 4-Nitroaniline 0.825 U 0.825 Hexachloroethane 0.330 U 0.330 4,6-Dinitro-2-methylphenol 0.825 U 0.825 Nitrobenzene 0.330 U 0.330 N-Nitrosodiphenylamine (1) 0.330 U 0.330 Isophorone 0.330 U 0.330 4-Bromophenyl-phenylether 0.330 U 0.330 2-Nitrophenol 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 2,4-Dimethylphenol 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 bis(2-Chloroethoxy)methane 0.330 U 0.330 Anthracene 0.330 U 0.330 2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330 U 0.330 1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Pyrene 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 Hexachlorobutadiene 0.330 U 0.330 3,3'-Dichlorobenzidine 0.330 U 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a) anthracene 0.330 U 0.330 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330 2,4,6-Trichlorophenol 0.330 U 0.330 Di-n-octylphthalate 0.330 U 0.330 2,4,5-Trichlorophenol 0.825 U 0.825 Benzo(b)fluoranthene 0.330 U 0.330 2-Chloronaphthalene 0.330 U 0.330 Benzo(k)fluoranthene 0.330 U 0.330 2-Nitroaniline 0.825 U 0.825 Benzo(a)pyrene 0.330 U 0.330 Dimethylphthalate 0.330 U 0.330 Indeno(1,2,3-cd)pyrene 0.330 U 0.330 Acenaphthylene 0.330 U 0.330 Dibenzo(a,h)anthracene 0.330 U 0.330 Benzo(g,h,i)perylene 0.330 U 0.330

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work 0-34 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1062

SAMPLE DATE: 10/26/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	73	23 - 120				
2-Fluorobiphenyl	68	30 - 115				
Terphenyl-D14	80	18 - 137				
Phenol-D5	74	24 - 113				
2-Fluorophenol	67	25 - 121				
2,4,6-Tribromophenol	77	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1062

SAMPLE DATE: 10/26/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 93.4579

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.5		1.1	7060	11/15/93
Aluminum	10000	N	19	6010	11/13/93
Barium	170	N*	19	6010	11/13/93
Beryllium	0.75		0.47	6010	11/13/93
Cadmium	0.36		0.47	6010	11/13/93
Chromium	9.6		0.93	6010	11/13/93
Copper	7.3	N	2.3	6010	11/13/93
Iron	9600	N	9.3	6010	11/13/93
Nickel	8.4		3.7	6010	11/13/93
Lead	7.0	N	0.32	7421	11/15/93
Mercury	0.023	Ū	0.023	7471	11/15/93
Silver	0.32		0.93	6010	11/13/93
Zinc	16		1.9	6010	11/13/93

## Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684 409832-003-01 Work Order: B3-10-382

SAMPLE ID: A1063

SAMPLE DATE: 10/26/93 14:20:00

SAMPLE MATRIX: SOIL

	Note	Reporting			Date	Method		
Test Name	Ref	Result	Limit	Units		Analyzed	Reference	
Chromium VI		0.500	0.50	MG/KG		11/05/93	EPA7196	

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1063
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/06/93

DILUTION FACTOR: 1.0

UNITS: UG/KG

J.1.2.2.1 00/ 1.0									
			Report	ing				Re	porting
	Result	Qual	Limi	.t		Result	Qua	1	Limit
Chloromethane	1	0	U 1	.0	1,2-Dichloropropane		5	บ	5
Bromomethane	1	0	บ 1	.0	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	1	0	บ 1	.0	Trichloroethene		5	U	5
Chloroethane	1	0	U 1	.0	Chlorodibromomethane		5	U	5
Methylene chloride	1	0	บ 1	.0	1,1,2-Trichloroethane		5	U	5
Acetone	1	1 J	в 10	0	Benzene		5	U	5
Carbon disulfide		5	U	5	cis-1,3-Dichloropropene		5	Ū	5
1,1-Dichloroethene		5	U	5	2-Chloroethylvinyl ether		10	U	10
-Dichloroethane		5	U	5	Bromoform		5	U	5
∡ns-1,2-Dichloroethene		5	U	5	2-Hexanone	1	50	U	50
cis-1,2-Dichloroethene		5	U	5	4-Methyl-2-pentanone	!	50	Ū	50
Chloroform		5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	0	U 10	0	Toluene		5	U	5
1,1,1-Trichloroethane		5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5	U	5	Ethylbenzene		5	Ū	5
Vinyl acetate	1	0	U 1	.0	Styrene		5	Ū	5
Dichlorobromomethane		5	ט	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits				
TOLUENE-D8	107	81 - 117				
BROMOFLUOROBENZENE	98	74 - 121				
1,2-DICHLOROETHANE-D4	111	70 - 120				

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}\mbox{\ensuremath{-}}$  analyte is found in the associated blank as well as in the sample 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1063
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/03/93 ANALYSIS DATE: 11/06/93 DILUTION FACTOR: 0.033

UNITS: MG/KG Reporting Reportir Result Qual Limit Result Qual Limit Phenol 0.330 U 0.330 2,6-Dinitrotoluene 0.330 U 0.330 bis(2-Chloroethyl)ether 0.330 U 0.330 3-Nitroaniline 0.825 U 0.825 2-Chlorophenol 0.330 υ 0.330 U 0.330 Acenaphthene 0.330 1,3-Dichlorobenzene 0.330 U 0.330 2,4-Dinitrophenol 0.825 U 0.825 1,4-Dichlorobenzene 0.330 U 0.330 4-Nitrophenol 0.825 U 0.825 Benzyl alcohol 0.330 U 0.330 Dibenzofuran 0.330 U 0.330 1,2-Dichlorobenzene 0.330 U 0.330 2,4-Dinitrotoluene 0.330 U 0.330 2-Methylphenol 0.330 U 0.330 Diethylphthalate 0.330 U 0.330 1(2-Chloroisopropyl)ether 0.330 U 0.330 4-Chlorophenyl-phenylether 0.330 U 0.330 Aethylphenol 0.330 U 0.330 Fluorene 0.330 U 0.330 N-Nitroso-di-n-propylamine 0.330 U 0.330 4-Nitroaniline 0.825 U 0.825 Hexachloroethane 0.330 U 0.330 4,6-Dinitro-2-methylphenol 0.825 U 0.825 Nitrobenzene 0.330 U 0.330 N-Nitrosodiphenylamine (1) 0.330 U 0.330 Isophorone 0.330 U 0.330 4-Bromophenyl-phenylether 0.330 U 0.330 2-Nitrophenol 0.330 U 0.330 Hexachlorobenzene 0.330 U 0.330 2,4-Dimethylphenol 0.330 U 0.330 Pentachlorophenol 0.825 U 0.825 Benzoic Acid 0.330 U 0.330 Phenanthrene 0.330 U 0.330 bis(2-Chloroethoxy)methane 0.330 U 0.330 Anthracene 0.330 U 0.330 2,4-Dichlorophenol 0.330 U 0.330 Di-n-butylphthalate 0.330 T 0.330 1,2,4-Trichlorobenzene 0.330 U 0.330 Fluoranthene 0.330 U 0.330 Naphthalene 0.330 U 0.330 Pyrene 0.330 U 0.330 4-Chloroaniline 0.330 U 0.330 Butylbenzylphthalate 0.330 U 0.330 Hexachlorobutadiene 0.330 U 0.330 3,3'-Dichlorobenzidine U 0.330 0.330 4-Chloro-3-methylphenol 0.330 U 0.330 Benzo(a)anthracene 0.330 U 0.330 2-Methylnaphthalene 0.330 U 0.330 Chrysene 0.330 U 0.330 Hexachlorocyclopentadiene 0.330 U 0.330 bis(2-Ethylhexyl)phthalate 0.330 U 0.330 2,4,6-Trichlorophenol 0.330 U 0.330 Di-n-octylphthalate 0.330 U 0.330 2,4,5-Trichlorophenol 0.825 U 0.825 Benzo(b) fluoranthene 0.330 U 0.330 2-Chloronaphthalene 0.330 U 0.330 Benzo(k) fluoranthene 0.330 U 0.330 2-Nitroaniline 0.825 U 0.825 Benzo(a)pyrene 0.330 U 0.330 Dimethylphthalate 0.330 U 0.330 Indeno(1,2,3-cd)pyrene 0.330 U 0.330 Acenaphthylene 0.330 U 0.330 Dibenzo(a,h)anthracene 0.330 U 0.330 Benzo(g,h,i)perylene 0.330 U 0.330

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1063

SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	76	23 - 120				
2-Fluorobiphenyl	75	30 - 115				
Terphenyl-D14	82	18 - 137				
Phenol-D5	81	24 - 113				
2-Fluorophenol	70	25 - 121				
2,4,6-Tribromophenol	7 <b>7</b>	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1063

SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 116.279

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.8		0.98	7060	11/15/93
Aluminum	8600	N	23	6010	11/13/93
Barium	95	N*	23	6010	11/13/93
Beryllium	0.63		0.58	6010	11/13/93
Cadmium	0.49		0.58	6010	11/13/93
Chromium	13		1.2	6010	11/13/93
Copper	6.0	N	2.9	6010	11/13/93
Iron	9700	N	12	6010	11/13/93
Nickel	10		4.7	6010	11/13/93
Lead	5.6	N	0.29	7421	11/15/93
Mercury	0.024	U	0.024	7471	11/15/93
Silver	0.15		1.2	6010	11/13/93
Zinc	15		2.3	6010	11/13/93

#### Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 Work Order: B3-10-382 409832-003-01

SAMPLE ID: A1064

SAMPLE DATE: 10/26/93 14:25:00

SAMPLE MATRIX: SOIL

	Note		Reporting			Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.500	0.50	MG/KG	11/05/93	EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

# IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1064

SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/06/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

·		R	eporting				Re	portin
	Result Qu	ıal	Limit		Result	Qua]	L	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	9.9	JB	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1.1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		LO	U	10
1-Dichloroethane	5	U	5	Bromoform		5	U	5
ans-1,2-Dichloroethene	5	U	5	2-Hexanone	;	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	บ	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	3.9	JB	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits					
TOLUENE-D8	106	81 - 117					
BROMOFLUOROBENZENE	101	74 - 121					
1,2-DICHLOROETHANE-D4	113	70 - 120					

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

# IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1064

SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/03/93
ANALYSIS DATE: 11/06/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			I	Reporti
Re	esult	Qual	Limit		Result	Qual	Limit
_,							
Phenol	0.330	_	0.330	2,6-Dinitrotoluene	0.330		0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.82	_	0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330	_	0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.82		0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.82		0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.330		0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.330		0.330
?-Methylphenol	0.330		0.330	Diethylphthalate	0.330		0.330
(2-Chloroisopropyl)ether	0.330		0.330	4-Chlorophenyl-phenylether			0.330
Methylphenol	0.330		0.330	Fluorene	0.330	ט כ	0.330
N-Nitroso-di-n-propylamine	0.330		0.330	4-Nitroaniline	0.825	<b>U</b>	0.825
Hexachloroethane	0.330	U (	0.330	4,6-Dinitro-2-methylphenol	0.825	ט פ	0.825
Nitrobenzene	0.330	U (	0.330	N-Nitrosodiphenylamine (1)	0.330	ט כ	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	ט כ	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	ט כ	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	ט פ	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	ט כ	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	ס כ	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	ט כ	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	<b>U</b>	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	<b>U</b>	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	ט כ	0.330
Hexachlorobutadiene	0.330	ט ט	0.330	3,3'-Dichlorobenzidine	0.330	<b>U</b>	0.330
4-Chloro-3-methylphenol	0.330	<b>U</b>	0.330	Benzo(a)anthracene	0.330	<b>U</b>	0.330
2-Methylnaphthalene	0.330	υ (	0.330	Chrysene	0.330	υ (	0.330
Hexachlorocyclopentadiene	0.330		0.330	bis(2-Ethylhexyl)phthalate	0.330		0.330
2,4,6-Trichlorophenol	0.330		0.330	Di-n-octylphthalate	0.330	<b>U</b>	0.330
2,4,5-Trichlorophenol	0.825		0.825	Benzo(b) fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330	ט ט	0.330	Benzo(k) fluoranthene	0.330		0.330
2-Nitroaniline	0.825		0.825	Benzo(a)pyrene	0.330		0.330
Dimethylphthalate	0.330		0.330	Indeno(1,2,3-cd)pyrene	0.330		0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330		0.330
				• • • •			

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1064
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	66	23 - 120				
2-Fluorobiphenyl	70	30 - 115				
Terphenyl-D14	77	18 - 137				
Phenol-D5	79	24 - 113				
2-Fluorophenol	66	25 - 121				
2,4,6-Tribromophenol	80	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}\mbox{\ensuremath{-}}$  analyte is found in the associated blank as well as in the sample 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1064
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 92.5925

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.7		1.2	7060	11/15/93
Aluminum	8900	N	19	6010	11/13/93
Barium	170	N*	19	6010	11/13/93
Beryllium	0.65		0.46	6010	11/13/93
Cadmium	091		0.46	6010	11/13/93
Chromium	13		0.93	6010	11/13/93
Copper	6.5	N	2.3	6010	11/13/93
Iron	11000	N	9.3	6010	11/13/93
Nickel	15		3.7	6010	11/13/93
Lead	3.7	N	0.35	7421	11/15/93
Mercury	0.024	ซ	0.024	7471	11/15/93
Silver	0.22		0.93	6010	11/13/93
Zinc	17		1.9	6010	11/13/93

## Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

SAMPLE ID: A1065

SAMPLE DATE: 10/26/93 14:30:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.500	0.50	MG/KG	11/05/93	EPA7196

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

# IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1065

SAMPLE DATE: 10/26/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/06/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Re	porting
	Result Qu	ıal	Limit		Result	Qua.	L	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	υ	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	9.0	JB	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1.1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
\-Dichloroethane	5	U	5	Bromoform		5	U	5
_ans-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	3.6	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	106	81 - 117
BROMOFLUOROBENZENE	102	74 - 121
1,2-DICHLOROETHANE-D4	114	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

# IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1065

SAMPLE DATE: 10/26/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/03/93
ANALYSIS DATE: 11/06/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	porting			R	eportin
•	esult		Limit		Result		Limit
<del></del> -		2			NCDU10	¥	
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	บ (	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	5 U	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	ט כ	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	5 U	0.825
1,4-Dichlorobenzene	0.330	ט	0.330	4-Nitrophenol	0.825	<b>U</b>	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	ט (	0.330
1,2-Dichlorobenzene	0.330	υ	0.330	2,4-Dinitrotoluene	0.330	ט (	0.330
2-Methylphenol	0.330	υ	0.330	Diethylphthalate	0.330	ט כ	0.330
(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	ט כ	0.330
<pre>- dethylphenol</pre>	0.330	U	0.330	Fluorene	0.330	<b>U</b>	0.330
N-Nitroso-di-n-propylamine	0.330	υ	0.330	4-Nitroaniline	0.825	<b>u</b>	0.825
Hexachloroethane	0.330	Ū	0.330	4,6-Dinitro-2-methylphenol	0.825	ט פ	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	ט (	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	ט (	0.330
2-Nitrophenol	0.330	บ	0.330	Hexachlorobenzene	0.330	υ (	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	<b>U</b>	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	) U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	υ (	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	) U	0.330
1,2,4-Trichlorobenzene	0.330	บ	0.330	Fluoranthene	0.330	ט (	0.330
Naphthalene	0.330	ט	0.330	Pyrene	0.330	) U (	0.330
4-Chloroaniline	0.330	บ	0.330	Butylbenzylphthalate	0.330	ט (	0.330
Hexachlorobutadiene	0.330	บ	0.330	3,3'-Dichlorobenzidine	0.330	<b>υ</b> (	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	υ (	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	) U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	υ (	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	ט (	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	ט (	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	ט (	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	ט (	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	) U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330	ט (	0.330

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1065 SAMPLE DATE: 10/26/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits			
Nitrobenzene-D5	69	23 - 120			
2-Fluorobiphenyl	68	30 - 115			
Terphenyl-D14	72	18 - 137			
Phenol-D5	72	24 - 113			
2-Fluorophenol	62	25 - 121			
2,4,6-Tribromophenol	77	19 - 122			

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
  - * Surrogate recovery is outside QC limit
    - D compound identified at a secondary dilution factor
    - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-382

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1065

SAMPLE DATE: 10/26/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 104.166

UNITS: MG/KG

Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
2.3		0.95	7060	11/15/93
8100	N	21	6010	11/13/93
160	N*	21	6010	11/13/93
0.69		0.52	6010	11/13/93
1.1		0.52	6010	11/13/93
13		1.0	6010	11/13/93
8.3	N	2.6	6010	11/13/93
14000	N	10	6010	11/13/93
15		4.2	6010	11/13/93
4.7	N	0.29	7421	11/15/93
0.024	U	0.024	7471	11/15/93
0.047		1.0	6010	11/13/93
18		2.1	6010	11/13/93
	2.3 8100 160 0.69 1.1 13 8.3 14000 15 4.7 0.024 0.047	Result Qual  2.3 8100 N 160 N* 0.69 1.1 13 8.3 N 14000 N 15 4.7 N 0.024 U 0.047	Result Qual Limit  2.3 0.95 8100 N 21 160 N* 21 0.69 0.52 1.1 0.52 13 1.0 8.3 N 2.6 14000 N 10 15 4.2 4.7 N 0.29 0.024 U 0.024 0.047 1.0	Result Qual Limit Reference  2.3 0.95 7060 8100 N 21 6010 160 N* 21 6010 0.69 0.52 6010 1.1 0.52 6010 13 1.0 6010 8.3 N 2.6 6010 14000 N 10 6010 15 4.2 6010 4.7 N 0.29 7421 0.024 U 0.024 7471 0.047 1.0 6010

#### Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1056
SAMPLE DATE: 10/21/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 11/01/93
DILUTION FACTOR: 1.0

UNITS: UG/L

		R	eporting				Re	porting
	Result Q	ual	Limit		Result	Qua.	1	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	บ	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
`-Dichloroethane	5	U	5	Bromoform		5	U	5
ans-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	2.0	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits			
TOLUENE-D8	94	88 - 110			
BROMOFLUOROBENZENE	105	86 - 115			
1,2-DICHLOROETHANE-D4	95	76 - 114			

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

SAMPLE ID: A1057

SAMPLE DATE: 10/26/93 08:45:00

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method	
Test Name	Ref	Result	Limit	Units	Analyzed	Reference	
Chromium VI		0.0100	0.010	MG/L	10/27/93	EPA7196	

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1057
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 11/01/93

DILUTION FACTOR: 1.0

UNITS: UG/L

·		R	eporting				Re	porting
	Result Qua	al	Limit		Result	Qual	•	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1.1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	:	10	U	10
1-Dichloroethane	5	U	5	Bromoform		5	U	5
ans-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	į	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	Ū	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xvlenes, total		5	U	5

Surrogates	% Recovery	Limits				
TOLUENE-D8	95	88 - 110				
BROMOFLUOROBENZENE	102	86 - 115				
1,2-DICHLOROETHANE-D4	100	76 - 114				

## Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1057 SAMPLE DATE: 10/26/93 SAMPLE MATRIX: WATER

EXTRACTION DATE: 11/01/93 ANALYSIS DATE: 11/05/93 DILUTION FACTOR: 1.0

UNITS: UG/L		R	eporting				Reporti
	Result	Qual	Limit		Result	Qual	Limit
_,	_	_			_	_	
Phenol		.0 ס		2,6-Dinitrotoluene		.0 U	
bis(2-Chloroethyl)ether	-	.0 ช		3-Nitroaniline	_	5 U	
2-Chlorophenol		.0 ס		Acenaphthene	_	.O U	
1,3-Dichlorobenzene		.0 ס		2,4-Dinitrophenol		5 U	
1,4-Dichlorobenzene	_	.0 ס		4-Nitrophenol		5 U	
Benzyl alcohol		.0 U		Dibenzofuran		ט ס.	
1,2-Dichlorobenzene	-	υ 0.		2,4-Dinitrotoluene		ט ס.	
2-Methylphenol		.0 ע		Diethylphthalate		ט ס.	
3(2-Chloroisopropyl)eth		ט 0.		4-Chlorophenyl-phenylether		ט 0.	
Methylphenol		.0 ע		Fluorene	_	ט ס.	
N-Nitroso-di-n-propylamine	e 1	.0 ע	10	4-Nitroaniline	1	ט ס.	
Hexachloroethane	1	.0 ע	10	4,6-Dinitro-2-methylphenol	L 2	5 U	25
Nitrobenzene	1	.0 ס	10	N-Nitrosodiphenylamine (1)	, 1	.O U	10
Isophorone	1	.0 ע	10	4-Bromophenyl-phenylether	1	U 0	10
2-Nitrophenol	1	υ 0.	10	Hexachlorobenzene	1	ט 0	10
2,4-Dimethylphenol	]	.0 U	10	Pentachlorophenol	2	5 U	25
Benzoic Acid	1	.0 σ	10	Phenanthrene	1	.O U	10
bis(2-Chloroethoxy)methan	e 1	.O U	10	Anthracene	1	.o u	10
2,4-Dichlorophencl	3	.0 ס	10	Di-n-butylphthalate	1	. <b>0</b> 0	10
1,2,4-Trichlorobenzene	1	.O U	10	Fluoranthene	1	. <b>0</b> U	10
Naphthalene	1	υ 0.	10	Pyrene	1	0 U	10
4-Chloroaniline	1	.0 U	10	Butylbenzylphthalate	1	0 υ	10
Hexachlorobutadiene	1	.0 ס	10	3,3'-Dichlorobenzidine	1	0 υ	10
4-Chloro-3-methylphenol	1	υ 0.	10	Benzo(a)anthracene	1	0 U	10
2-Methylnaphthalene	1	υ 0.	10	Chrysene	1	o u	10
Hexachlorocyclopentadiene	1	υ 0.	10	bis(2-Ethylhexyl)phthalate	<u> </u>	0 υ	10
2,4,6-Trichlorophenol	1	υ 0.	10	Di-n-octylphthalate		0 υ	10
2,4,5-Trichlorophenol	1	υ 0.	10	Benzo(b)fluoranthene	1	0 υ	10
2-Chloronaphthalene	1	υ O.	10	Benzo(k)fluoranthene	1	0 υ	10
2-Nitroaniline	2	<b>5</b> ប	25	Benzo(a)pyrene	1	0 U	10
Dimethylphthalate	1	.Ο υ	10	Indeno(1,2,3-cd)pyrene	1	0 U	10
Acenaphthylene	1	υ 0.	10	Dibenzo(a,h)anthracene	1	υ 0	10
				Benzo(g,h,i)perylene	1	ο υ	10

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1057

SAMPLE DATE: 10/26/93 SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	65	35 - 114				
2-Fluorobiphenyl	70	43 - 116				
Terphenyl-D14	94	33 - 141				
Phenol-D5	60	10 - 94				
2-Fluorophenol	63	21 - 100				
2,4,6-Tribromophenol	84	10 - 123				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

## Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1057
SAMPLE DATE: 10/26/93
SAMPLE MATRIX: WATER

DILUTION FACTOR (6010): 1.00000

UNITS: MG/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	ט	0.010	7060	11/12/93
Aluminum	0.20	ប	0.20	6010	11/16/93
Barium	0.20	U	0.20	6010	11/16/93
Beryllium	0.0050	U	0.0050	6010	11/16/93
Cadmium	0.0050	U	0.0050	6010	11/16/93
Chromium	0.010	U	0.010	6010	11/16/93
Copper	0.025	U	0.025	6010	11/16/93
Iron	0.10	ប	0.10	6010	11/16/93
Nickel	0.040	U	0.040	6010	11/16/93
Lead	0.0030	บ	0.0030	7421	11/11/93
Mercury	0.00020	U	0.00020	7471	11/16/93
Silver	0.010	Ŭ	0.010	6010	11/16/93
Zinc	0.020	Ū	0.020	6010	11/16/93

#### Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

SAMPLE ID: LAB BLANK

SAMPLE DATE:

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method	
Test Name	Ref	Result	<u>Limit</u>	Units	<u>Analyzed</u>	Referenc	e
Chromium VI		0.0100	0.010	MG/KG	11/05/93	EPA7196	

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/05/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

	Reporting					1	Reporting
	Result	Qual	Limit		Result	Qual	Limit
Chloromethane	1	10 t	J 10	1,2-Dichloropropane		5 1	U 5
Bromomethane	1	ιο τ	10	trans-1,3-Dichloropropene		5 1	U 5
Vinyl chloride	1	ιο τ	10	Trichloroethene		5 (	J 5
Chloroethane	1	L <b>O</b> 0	10	Chlorodibromomethane		5 t	J 5
Methylene chloride	0.	. <b>5</b> J	10	1,1,2-Trichloroethane		5 t	J 5
Acetone	4.	.2 J	100	Benzene		5 t	J 5
Carbon disulfide		5 τ	5	cis-1,3-Dichloropropene		5 t	J 5
1.1-Dichloroethene		5 t	5	2-Chloroethylvinyl ether		10 T	<b>10</b>
:-Dichloroethane		5 t	5	Bromoform		5 t	J 5
_ans-1,2-Dichloroethene		5 t	5	2-Hexanone	!	50 t	<b>50</b>
cis-1,2-Dichloroethene		5 t	5	4-Methyl-2-pentanone	!	50 t	J 50
Chloroform		5 t	5	Tetrachloroethene		5 t	J 5
1,2-Dichloroethane		5 t	5	1,1,2,2-Tetrachloroethane		5 t	J 5
2-Butanone	3.	.4 3	100	Toluene		5 t	J 5
1,1,1-Trichloroethane		5 t	J 5	Chlorobenzene		5 t	J 5
Carbon tetrachloride		5 t	5	Ethylbenzene		5 t	J 5
Vinyl acetate	1	LO T	J 10	Styrene		5 1	<b>5</b>
Dichlorobromomethane		5 t	J 5	Xvlenes, total		5 1	v 5

Surrogates	% Recovery	Limits			
TOLUENE-D8	103	81 - 117			
BROMOFLUOROBENZENE	103	74 - 121			
1,2-DICHLOROETHANE-D4	107	70 - 120			

## Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

Page: 59 of 69

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

## IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK SAMPLE DATE: not spec SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/03/93
ANALYSIS DATE: 11/06/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			I	Reporti
Re	sult	Qual	Limit		Result	Qual	Limit
<b>-</b>							
Phenol	0.330		0.330	2,6-Dinitrotoluene	0.33	-	0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.82		0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.33		0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.82		0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.82		0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.33		0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.33		0.330
<pre>?-Methylphenol</pre>	0.330		0.330	Diethylphthalate	0.33		0.330
(2-Chloroisopropyl)ether	0.330		0.330	4-Chlorophenyl-phenylether			0.330
Methylphenol	0.330		0.330	Fluorene	0.33		0.330
N-Nitroso-di-n-propylamine	0.330		0.330	4-Nitroaniline	0.82		0.825
Hexachloroethane	0.330	U (	0.330	4,6-Dinitro-2-methylphenol			0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.33	υ 0	0.330
Isophorone	0.330	U (	0.330	4-Bromophenyl-phenylether	0.33	υ 0	0.330
2-Nitrophenol	0.330	ט כ	0.330	Hexachlorobenzene	0.33	υ 0	0.330
2,4-Dimethylphenol	0.330	U (	0.330	Pentachlorophenol	0.82	5 U	0.825
Benzoic Acid	0.330	U (	0.330	Phenanthrene	0.33	υ 0	0.330
bis(2-Chloroethoxy)methane	0.330	<b>U</b>	0.330	Anthracene	0.33	U O	0.330
2,4-Dichlorophenol	0.330	<b>U</b>	0.330	Di-n-butylphthalate	0.33	U O	0.330
1,2,4-Trichlorobenzene	0.330	<b>U</b>	0.330	Fluoranthene	0.33	υ 0	0.330
Naphthalene	0.330	<b>U</b>	0.330	Pyrene	0.33	υ 0	0.330
4-Chloroaniline	0.330	U (	0.330	Butylbenzylphthalate	0.33	υ 0	0.330
Hexachlorobutadiene	0.330	<b>U</b>	0.330	3,3'-Dichlorobenzidine	0.33	υ 0	0.330
4-Chloro-3-methylphenol	0.330	<b>U</b>	0.330	Benzo(a)anthracene	0.33	U 0	0.330
2-Methylnaphthalene	0.330	<b>U</b>	0.330	Chrysene	0.33	υ 0	0.330
Hexachlorocyclopentadiene	0.330	<b>U</b>	0.330	bis(2-Ethylhexyl)phthalate	0.33	υ 0	0.330
2,4,6-Trichlorophenol	0.330	υ (	0.330	Di-n-octylphthalate	0.33	υ 0	0.330
2,4,5-Trichlorophenol	0.825		0.825	Benzo(b)fluoranthene	0.33	υ 0	0.330
2-Chloronaphthalene	0.330	υ (	0.330	Benzo(k)fluoranthene	0.33	υ 0	0.330
2-Nitroaniline	0.825		0.825	Benzo(a)pyrene	0.33		0.330
Dimethylphthalate	0.330		0.330	Indeno(1,2,3-cd)pyrene	0.33	υ 0	0.330
Acenaphthylene	0.330	<b>U</b>	0.330	Dibenzo(a,h)anthracene	0.33		0.330
- <del>-</del>				Benzo(g,h,i)perylene	0.33		0.330

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK SAMPLE DATE: not spec SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	65	23 - 120				
2-Fluorobiphenyl	71	30 - 115				
Terphenyl-D14	69	18 - 137				
Phenol-D5	69	24 - 113				
2-Fluorophenol	59	25 - 121				
2,4,6-Tribromophenol	68	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

## Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 1.0

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	ט	0.010	7060	11/15/93
Aluminum	0.20	ប	0.20	6010	11/13/93
Barium	0.20	บ	0.20	6010	11/13/93
Beryllium	0.0050	บ	0.0050	6010	11/13/93
Cadmium	0.0050	U	0.0050	6010	11/13/93
Chromium	0.010	U	0.010	6010	11/13/93
Copper	0.025	บ	0.025	6010	11/13/93
Iron	0.10	บ	0.10	6010	11/13/93
Nickel	0.040	บ	0.040	6010	11/13/93
Lead	0.0030	ប	0.0030	7421	11/15/93
Mercury	0.00020	U	0.00020	7471	11/15/93
Silver	0.010	U	0.010	6010	11/13/93
Zinc	0.020	U	0.020	6010	11/13/93

#### Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Page: 62 of 69

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-10-382

SAMPLE ID: LAB BLANK

SAMPLE DATE:

SAMPLE MATRIX: WATER

	Note		Reporting		Date Method
Test Name	Ref	Result	Limit	Units	Analyzed Reference
Chromium VI		0.0100	0.010	MG/L	10/27/93 EPA7196

Page: 63 of 69

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-10-382

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER
ANALYSIS DATE: 11/01/93
DILUTION FACTOR: 1.0

UNITS: UG/L

		1	Reporting				Re	portine
	Result	Qual	Limit		Result	Qua.	L	Limit
Chloromethane	1	.Ο τ	J 10	1,2-Dichloropropane		5	U	5
Bromomethane	1	.O t	J 10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	1	.O t	J 10	Trichloroethene		5	U	5
Chloroethane	1	.O T	J 10	Chlorodibromomethane		5	U	5
Methylene chloride	4.	2 3	10	1,1,2-Trichloroethane		5	U	5
Acetone	10	0 t	100	Benzene		5	U	5
Carbon disulfide		5 t	J 5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5 t	J 5	2-Chloroethylvinyl ether		10	U	10
`-Dichloroethane		5 t	5	Bromoform		5	U	5
ans-1,2-Dichloroethene		5 t	J 5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene		5 t	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform		5 t	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5 t	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	4.	1 3	100	Toluene		5	U	5
1,1,1-Trichloroethane		5 t	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5 t	5	Ethylbenzene		5	U	5
Vinyl acetate	1	.0 t	J 10	Styrene		5	U	5
Dichlorobromomethane		5 t	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	95	88 - 110
BROMOFLUOROBENZENE	101	86 - 115
1,2-DICHLOROETHANE-D4	105	76 - 114

## Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

Page: 64 of 69

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME: ARN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER

EXTRACTION DATE: 11/01/93 ANALYSIS DATE: 11/06/93 DILUTION FACTOR: 1.0

UNITS: UG/L	1.0	R	eporting			1	Reportin
•	Result		Limit		Result	Qual	Limit
		<b>-</b>				_	
Phenol	1	.o u	10	2,6-Dinitrotoluene	10	ט כ	10
bis(2-Chloroethyl)ether	1	.0 U	10	3-Nitroaniline	2!	5 U	25
2-Chlorophenol	1	.O U	10	Acenaphthene	10	ט כ	10
1,3-Dichlorobenzene	1	.Ο υ	10	2,4-Dinitrophenol	25	5 U	25
1,4-Dichlorobenzene	1	.O U	10	4-Nitrophenol	25	<b>U</b>	25
Benzyl alcohol	1	.O U	10	Dibenzofuran	10	U (	10
1,2-Dichlorobenzene	1	.O U	10	2,4-Dinitrotoluene	10	U (	10
2-Methylphenol	1	υ O.	10	Diethylphthalate	10	<b>U</b>	10
(2-Chloroisopropyl)ethe	r 1	.0 บ	10	4-Chlorophenyl-phenylether	: 10	ט כ	10
. Aethylphenol	1	.O .	10	Fluorene	10	<b>U</b>	10
N-Nitroso-di-n-propylamine	1	ט 0.	10	4-Nitroaniline	10	<b>U</b>	10
Hexachloroethane	1	ט 0.	10	4,6-Dinitro-2-methylphenol	L 2!	5 U	25
Nitrobenzene	1	ט 0.	10	N-Nitrosodiphenylamine (1)	10	ט כ	10
Isophorone	1	ט 0.	10	4-Bromophenyl-phenylether	10	ט כ	10
2-Nitrophenol	1	ט 0.	10	Hexachlorobenzene	10	ט כ	10
2,4-Dimethylphenol	1	ט 0.	10	Pentachlorophenol	2	5 U	25
Benzoic Acid	1	.0 ש	10	Phenanthrene	10	ס כ	10
bis(2-Chloroethoxy)methane	1	ט 0.	10	Anthracene	10	ט כ	10
2,4-Dichlorophenol	1	ט ס.	10	Di-n-butylphthalate	10	ט כ	10
1,2,4-Trichlorobenzene	1	.0 ປ	10	Fluoranthene	10	ט כ	10
Naphthalene	1	ט 0.	10	Pyrene	10	ט כ	10
4-Chloroaniline	1	.0 ס	10	Butylbenzylphthalate	10	ט כ	10
Hexachlorobutadiene	1	ט ס.	10	3,3'-Dichlorobenzidine	10	U C	10
4-Chloro-3-methylphenol	1	ט 0.	10	Benzo(a)anthracene	10	υ (	10
2-Methylnaphthalene	1	ט 0.	10	Chrysene	10	ט כ	10
Hexachlorocyclopentadiene	1	ט 0.	10	bis(2-Ethylhexyl)phthalate	e 10	<b>U</b>	10
2,4,6-Trichlorophenol	1	ט 0.	10	Di-n-octylphthalate	10	ט (	10
2,4,5-Trichlorophenol	1	.O U	10	Benzo(b)fluoranthene	10	U (	10
2-Chloronaphthalene	1	.0 ซ	10	Benzo(k)fluoranthene	10	ט כ	10
2-Nitroaniline	2	:5 U	25	Benzo(a)pyrene	10	ט כ	10
Dimethylphthalate	1	υ 0.	10	Indeno(1,2,3-cd)pyrene	10	υ (	10
Acenaphthylene	1	υ 0.	10	Dibenzo(a,h)anthracene	10	ט כ	10

Benzo(g,h,i)perylene

10 U 10

Page: 65 of 69

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK SAMPLE DATE: not spec SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	67	35 - 114
2-Fluorobiphenyl	72	43 - 116
Terphenyl-D14	92	33 - 141
Phenol-D5	61	10 - 94
2-Fluorophenol	67	21 - 100
2,4,6-Tribromophenol	81	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

#### Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
  - * Surrogate recovery is outside QC limit
  - D compound identified at a secondary dilution factor
  - E concentration exceeds calibration range

Page: 66 of 69

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 Work Order: B3-10-382

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER

DILUTION FACTOR (6010): 1.0

UNITS: MG/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	ט	0.010	7060	11/12/93
Aluminum	0.20	U	0.20	6010	11/16/93
Barium	0.20	U	0.20	6010	11/16/93
Beryllium	0.0050	U	0.0050	6010	11/16/93
Cadmium	0.0050	ช	0.0050	6010	11/16/93
Chromium	0.010	U	0.010	6010	11/16/93
Copper	0.025	υ	0.025	6010	11/16/93
Iron	0.10	υ	0.10	6010	11/16/93
Nickel	0.040	U	0.040	6010	11/16/93
Lead	0.0030	U	0.0030	7421	11/11/93
Mercury	0.00020	U	0.00020	7471	11/15/93
Silver	0.010	U	0.010	6010	11/16/93
Zinc	0.020	U	0.020	6010	11/16/93

## Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Page: 67 of 69

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN. TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

#### IV. Methodology

Requested analyses were performed according to the following methods.

TEST NAME ICP Metals

TEST CODE 6010

Metals by ICP

Inductively coupled emission spectroscopy according to Method 6010, "Test Methods for Evaluating Solid Waste Physical/Chemical Methods", SW-846, Third Edition.

TEST NAME Hazardous Substance Vols. TEST CODE 8240TK

Hazardous Substance List Volatiles

Method 8240, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. GC/MS Purge and Trap analysis.

TEST NAME ABN HSL GC/MS Extractables TEST CODE 8270TK

Hazardous Substance List Extractables

Method 8270, SW-846, Test Methods for Evaluating Solid Waste, Third Edition. Acid/Base-Neutral extraction

followed by GC/MS analysis.

TEST NAME Arsenic - Graphite Furnace TEST CODE AS GF

Arsenic

Graphite Furnace

Method 7060, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. EPA 206.2-Technical Additions to Methods for Chemical Analysis of Water and Wastes,

EPA-600/4-82-055, December 1982.

TEST NAME Chromium VI

TEST CODE CR VI

Chromium VI

Method 7196, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Colorimetric analysis. Equivalent to Standard Methods 3500-Cr D.

TEST NAME Mercury

TEST CODE HG AA

Mercury

Method 7471, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Cold vapor atomic absorption. Method 7470 is used for water.

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Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-10-382

TEST NAME Mercury

TEST CODE HG_AA

Method 245.5-"Technical Additions to Methods for Chemical Analysis of Water and Wastes,"

EPA-600/4-82-055, December 1982.

TEST NAME Metals

TEST CODE ICPTK2

Method not available.

TEST NAME Lead - Graphite Furnace TEST CODE PB GF

Lead

EPA 7421, SW-846, Test Methods for Evaluating Solid

Graphite Wastes, Third Edition.

Furnace

EPA 239.2-Technical Additions to Methods for Chemical

Analysis of Water and Wastes, " EPA-600/4-82-055,

December 1982.

TEST NAME ICPES Digestion - Water TEST CODE Z3005

Water Digestion

Method 3005A, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Digestion procedure for the preparation of surface and ground water samples for analysis by flame atomic absorption spectroscopy and inductively coupled plasma spectroscopy. The procedure

determines total recoverable or dissolved metals.

TEST NAME GFAA Digestion - Water

TEST CODE Z3020

Water Digestion

Method 3020, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for

Graphite Furnace.

TEST NAME GFAA Digestion - Soil

TEST CODE Z3050F

Page: 69 of 69

Company: IT CORPORATION

Date: 12/07/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-10-382

TEST NAME GFAA Digestion - Soil TEST CODE 23050F

Soil Digestion Method 3050, SW-846, Test Methods for Evaluating Solid

Wastes, Third Edition. Acid digestion technique for

Graphite Furnace/Flame AA analysis.

TEST NAME ICPES Digestion - Soil TEST CODE Z3050P

Soil Digestion Method 3050, SW-846, Test Methods for Evaluating Solid

Wastes, Third Edition. Acid digestion technique for ICPES analysis. Equivalent to Method 3050A, SW-846

Update I, July 1992.

40983203.01 PNATIONAL 1 NOLOGY CORPORATION

CHAIN OF CUSTOLY RECORD* **EST AND ANALYSIS RE** 

Samples Shipment Date 7 10-26-93

Lab Destination 8

83/0382 Reference Document N 71351 Page 1 of 2

Bill to:5 409832, 03.0

Lab Contact 9 Karren Decure Dout 12 Post 736-376

Jenn'y 5 Report to: 10

White: To accompany samples

Carrier/Waybill No. 13 fX, 8166255832

Project Manager 4 Jimmy 1 Gylon

Sample Team Members 2 . " Project Name/No. 17

Profit Center No. 3

Purchase Order No. 6 402832.03

ONE CONTAINER PER LINE Required Report Date 11 15 Day S

Sample ¹⁴ Number	Sample 15 Description/Type	Date/Time 16 Con Collected 1	Container ¹⁷ Type	ntainer ¹⁷ Sample ¹⁸ Iype Volume	B pre- 19 servative	Requested Testing 20 Program	Condition on ²¹ Receipt	Disposal ²² Record No.
A1056	Trip Blank	1700	Clear	leas 40 M LOOL	HC.K.	8240	500d 100	o' with ef B
4057	Rinse Blank	10-26-93	<u></u>	Want	#CL 000 L	8240		1.00/V/0/48
41057	- (	10-26-93	Amber	77	7000	8270		
41057		0845	Hod	Just	7003 41403	4010/7000		
A1057		10-26-93	Yod	11	7007	HexChrome		4.4 67
41058	1:48	10-72-63 0850	clear	Jus21		8240		7
H1058	. So.	08.92	5105/	Juas	1	5270, 600/700	·	
								,

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33Special Instructions:

Possible Hazard Identification: 24	•	•	Sample Disposal: 23	`		
Non-hazard [ ] Flammable   J Skin Irritant   J	Poison B _ Unknown	FK	Return to Client   Dispos	Disposal by Lab	Archive	(mo
Turnaround Time Required: 26	QC, Level: 27					
Normal X Rush 1	7: 77:	7	Project Specific (specify);	A STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STA		11

*See back of form for special instructions

08.)

1000 99 1.060

Date: Time:

1. Received by 28 (Signature/Affiliation)

Date: Time:

Date: Time:

Date: Time:

Date: Time:

Date: Time:

3. Received by (Signature/Affiliation)

2. Received by (Signature/Affiliation)

MCA 3/15/9

1. Relinquished by  28  (Signature/Affiliation) 2. Relinquished by (Signature/Affiliation) 3. Relinquished by (Signature/Affiliation)

Comments: 29

TRNATIONAL HINOLOGY W. CORPORATION

Reference Document No.º Page 2 of 2

Samples Shipment Date 10 % 6 %

ANALYSIS RE EST AND CHAIN OF CUSTODY RECORD (cont.)*

Project No. 409832, 03-0 /

Project Name TH

B310382

Date/Time ¹⁶ Collected
16-26-93 Geal
7
10-26-93
10-26-93
0.76.93
08/5
10-26-93
1026-93
1.4.20
14.20
19-26-93
1725
1/30
16-26-93

Yellow: Field copy

White: To accompany samples

*See back of form for special instructions

- MCA SURIO

Work order : B310382

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
01B						
	Arsenic	B310382-13B	11123050F1	11/12/93	11/15/93	90.9
	Chromium VI	B310382-13B	1105CR VI2	11/05/93	11/05/93	10.0
	Mercury	B310382-13B	1115HGAA1	11/15/93	11/15/93	119
	Lead	B310382-13B	11123050F1	11/12/93	11/15/93	364

Work order : B310382

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
02B						
	Arsenic	B310382-13B	11123050F1	11/12/93	11/16/93	104
	Chromium VI	B310382-13B	1105CR VI2	11/05/93	11/05/93	50.0
	Mercury Lead	B310382-13B B310382-13B	1115HGAA1 11123050F1	11/15/93 11/12/93	• •	133 104

Work order : B310382

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
03B	Arsenic Chromium VI Mercury Lead	B310382-13B B310382-13B B310382-13B B310382-13B	11123050F1 1105CR_VI2 1115HGAA1 11123050F1	11/12/93 11/05/93 11/15/93 11/12/93	11/05/93 11/15/93	108 50.0 103 108

Work order : B310382

Sample ID : A1060-MS

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
04B	Arsenic Chromium VI Mercury Lead	B310382-13B B310382-13B B310382-13B B310382-13B	11123050F1 1105CR_VI2 1115HGAA1 11123050F1	11/12/93 11/05/93 11/15/93 11/12/93	11/05/93 11/15/93	116 50.0 128 116

Work order : B310382

Sample ID : A1060-MSD

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
05B						
	Arsenic	B310382-13B	11123050F1	11/12/93	11/16/93	84.7
	Chromium VI	B310382-13B	1105CR VI2	11/05/93	11/05/93	50.0
	Mercury	B310382-13B	1115HGAA1	11/15/93	11/15/93	118
	Lead	B310382-13B	11123050F1	11/12/93	11/15/93	339

Work order : B310382

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
06B						
	Arsenic	B310382-13B	11123050F1	11/12/93	11/16/93	84
	Chromium VI	B310382-13B	1105CR VI2	11/05/93	11/05/93	50.0
	Mercury	B310382-13B	1115HGAA1	11/15/93	11/15/93	102
	Lead	B310382-13B	11123050F1	11/12/93	11/15/93	336

Work order : B310382

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
07B						
	Arsenic	B310382-13B	11123050F1	11/12/93	11/16/93	108
	Chromium VI	B310382-13B	1105CR VI2	11/05/93	11/05/93	10.0
	Mercury	B310382-13B	1115HGAA1	11/15/93	11/15/93	116
	Lead	B310382-13B	11123050F1	11/12/93	11/15/93	108

Work order : B310382

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
08B						
	Arsenic	B310382-13B	11123050F1	11/12/93	11/16/93	98
	Chromium VI	B310382-13B	1105CR VI2	11/05/93	11/05/93	50.0
	Mercury	B310382-13B	1115HGAA1	11/15/93	11/15/93	120
	Lead	B310382-13B	11123050F1	11/12/93	11/15/93	98

Work order : B310382

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
09в						
	Arsenic	B310382-13B	11123050F1	11/12/93	11/16/93	116
	Chromium VI	B310382-13B	1105CR_VI2	11/05/93	11/05/93	50.0
	Mercury	B310382-13B	1115HGAA1	11/15/93	11/15/93	118
	Lead	B310382-13B	11123050F1	11/12/93	11/15/93	116

Work order : B310382

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
108	Arsenic Chromium VI Mercury Lead	B310382-13B B310382-13B B310382-13B B310382-13B	11123050F1 1105CR_VI2 1115HGAA1 11123050F1	11/12/93 11/05/93 11/15/93 11/12/93	11/05/93 11/15/93	95.2 50.0 120 95.2

Work order : B310382

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
12C						
	Arsenic	B310382-14A	111030201	11/10/93	11/12/93	1.0
	Mercury	B310382-14A	1116HGAA2	11/16/93	11/16/93	1.0
	Lead	B310382-14A	111030201	11/10/93	11/11/93	1.0
12D	Chromium VI	B310382-14A	1027CR_VI1	10/27/93	10/27/93	1.0

Work order : B310382

Sample ID : LAB BLANK

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
13B						
	Arsenic Chromium VI Mercury Lead	B310382-13B B310382-13B B310382-13B B310382-13B	11123050F1 1105CR_VI2 1115HGAA1 11123050F1	11/12/93 11/05/93 11/15/93 11/12/93	11/05/93 11/15/93	1.0 1.0 1.0

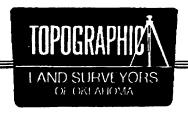
Work order: B310382

Sample ID : LAB BLANK

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
14A						
	Arsenic	B310382-13B	111030201	11/10/93	11/12/93	1.0
	Chromium VI	B310382-14A	1027CR VI1	10/27/93	10/27/93	1.0
	Mercury	B310382-13B	1116HGAA2	11/16/93	11/15/93	1.0
	Lead	B310382-13B	111030201	11/10/93	11/11/93	1.0

# APPENDIX D SITE SURVEY REPORT

Phone: (405) 843-4847 WAT8: (800) 854-3219 FAX: (405) 843-0975



## Surveying and Mapping for Oklahoma's Energy Industry

6709 N. Classen Blvd.

Oklahoma City, Oklahoma 73116

International Technology Corporation

Attn.: Joe Pacelli 312 Directors Drive Knoxville, Tn 37923

Reference: IT Subcontract No. 547295

IDO-5001 Bid 93116

(Survey Contract)

4.4 Documentation of Surveying Activities

## **Survey Contractor:**

Topographic Land Surveyors of Oklahoma 6709 N. Classen Blvd. Oklahoma City, Oklahoma 73116 Edward D. (Deral) Paulk, PLS President Harry McClintick, PLS Party Chief (405) 843-4847

#### Instrumentation:

Work done was completed with a Topcon/Sokkisha Model C3E. Last calibration by the factory was done 10/10/1993 and was checked daily by standard survey methods to determine that the tolerance was within factory limits. The unique serial number for the instrument is # 153047. The data collector was a Hewlett-Packard 48SX using the TDS Survey card.

## Methods:

Standard mil-spec survey methods were employed during the survey and included.

Double sets of repetitive angles, both in horizontal and vertical.

Distance in Meters and Feet for double redundancy.

#### **Control Points:**

All control points used were set by the Corps of Engineers and the coordinates were supplied to us in NAD-83 Meters, Oklahoma North Zone (3501) based upon the Lambert projection. Typical numbers were;

BM SE (secondary control points)

BM PR (Primary control points)

These points were established by Trimble 4000SE GPS receivers and are capable of obtaining accuracy in the centimeter range. During our survey we confirmed this accuracy and due to the nature of GPS usage, we did not balance our traverse of the monumentation. See explanation beginning on page three, this document.

## Tabulation of Vertical and Horizontal Coordinates:

In sheet form broken into per site information in three formats. NAD-83 Meters

NAD-27 Feet

NAD-83 Feet

## Field Notes, Calculations and Reduction Techniques:

All field work was performed using Total Station and no reduction was necessary. Grid and Sea level factors used in the calculations are attached as part of this report. No paper field notes were kept, except diagrams explaining shot points. These are included as drawings and are part of the digital information supplied.

Actual closure of each particular site is disclosed within this document beginning on page

This survey is true and accurate based upon monumentation supplied by Tinker Air Force Base.

Edward D. Paulk, PLS #/2/9

Topographic Land Surveyors of Oklahoma

6709 N. Classen Blvd.

Oklahoma City, Oklahoma 73116

## **USAGE OF GPS MONUMENTATION**

## Qualifications:

We are a Trimble Navigation dealer for the Midwest and have had crews surveying using GPS for over two years. Edward D. Paulk, has attended training and seminars continually to maintain a level of experience and technical knowledge of GPS that exceeds specs of GPS surveys.

During the course of our preliminary survey, we had closures that exceeded specs and we were forced to continue surveys back to our point of beginning to check our accuracy. We continually proved our surveys by closures exceeding 1 in 10,000, but we could not achieve this using the provided GPS monumentation and closing on a third monument.

We contacted the base mapping department and learned that the monuments were set using 4000SE receivers (GPS) by the Corps of Engineers. The 4000SE is capable of accuracy on any point of +/- 1-3 Centimeters. After this determination, we were well within specs of their given coordinates.

Their survey closure was probably quite good given the distances that they monumented, however when you use relatively close monuments as our survey dictated and very few traverse points, the error looks poor. Had we shot a mile away, then back to add some footage to our survey, the closure would have been much better. Since this technique is only used to comply with a pure mathematical closure, not a better survey, and would not actually improve positional accuracy, we did not do this.

# Site by Site Report

File HM-A HCL Tank 4 Soil Borings

IT Drawing #409832 Fig. 5.5

Horizontal and Vertical Control was establish for (4) four Soil Borings.

BM SE-33, SE-05 and PR-07 were used for control.

Upon first completion of traverse, we closed on PR-07 with 3.041' of error, but our vertical was with 0.05'. We made a closure back to SE-05 and closed within 0.4'. This site had the only apparent large discrepancy in their control. Since SE-33 and SE-05 agreed within limits we used these to determine closure.

Horizontal Accuracy 1 in 10,000 Vertical Accuracy 1 in 95,800

File HM-B SPILL POND

2 Soil Borings

IT Drawing #409832 Fig. 5.6

Horizontal and Vertical Control was establish for (2) Soil Borings.

BM SE-33, SE-37 and SE-42 were used for control.

Horizontal Accuracy 1 in 5902 Vertical Accuracy 1 in 12,000

We closed back upon our first monument horizontally 1 in 25,000 as a check.

File HM-C

Sludge Drying Beds and Old Pesticide Area

13 Soil Borings 6 Monitor Wells 7 SG Points

IT Drawing # 409832 Fig. 5.3 and 5.7

Horizontal and Vertical Control was established for (13) Soil Borings, (6) Six Monitor wells and (7) SG Points.

BM SE-41, SE-45 and SE-47 were used for control.

Horizontal Accuracy 1 in 8725 Vertical Accuracy 1 in 390,000

We closed back upon BM SE-45 as a check and closed 1 in 14,000 Horizontally.

### . 6

### FileHM-D

# **Fuel Truck**

- (8) Soil Borings
- (3) Monitor Wells
- (3) SG Points

IT Drawing #409832 Fig. 5.4

Horizontal and Vertical Control was established for (8) Soil Borings, (3) Monitor wells and (3) SG Points.

BM PR-02, SE-16 and PR-03 were used for control.

Horizontal Accuracy 1 in 22,586 Vertical Accuracy 1 in 20,000

# File HM-E

# Ordnance Disposal Area

- (5) Soil Borings
- (4) Corners of area as per staked and Dan McGregor's instructions.

IT Drawing #409832 Fig. 5.1

Horizontal and Vertical Control was established for (5) Soil Borings, (4) Corners of area. BM SE-19, PR-02 and SE-016 were used for control.

Horizontal Accuracy 1 in 10,000 Vertical Accuracy 1 in 20,000

## File HM-F

# Fire Training Area 2

(8) Monitor Wells

IT Drawing #409832 Fig. 5.8

Horizontal and Vertical Control was established for (8) Monitor Wells.

BM SE-37, SE-33 and BM32 were used for control.

Horizontal Accuracy 1 in 34,800 Vertical Accuracy 1 in 95,000

# File HM-G

# **AFFF Fire Control Pond**

(4) Soil Borings

IT Drawing #409832 Fig. 5.2

Horizontal and Vertical Control was established for (4) Soil Borings.

BM SE-31, SE-22 and PR-01 were used for control.

Horizontal Accuracy 1 in 6500 Vertical Accuracy 1 in 58,000

# **Shots Typical**

Soil Borings-

One X,Y,Z placed center of drill hole, typically on top of concrete fill-in area.

(36) Total Soil Borings

Monitor Well-

(Flush mount) Three X,Y,Z,s were placed upon each well.

1: NW Corner of concrete pad.

2: Top of retaining casing, where well number was stamped into a milled area.

3: Top of well, under seal, (X,Y determined for center, and Z determined at north lip of well.

(Tower Mount) Three X,Y,Z,s were placed upon each well.

1: NW Corner of concrete pad.

2: Top of square guard, center

3: Screw cap removed, X and Y in Center and Z on the North lip of well.

(17) Total Monitoring wells. 51 points.

In addition; we determined X,Y and Z for a number of SG points. These were determined at center of dig point.

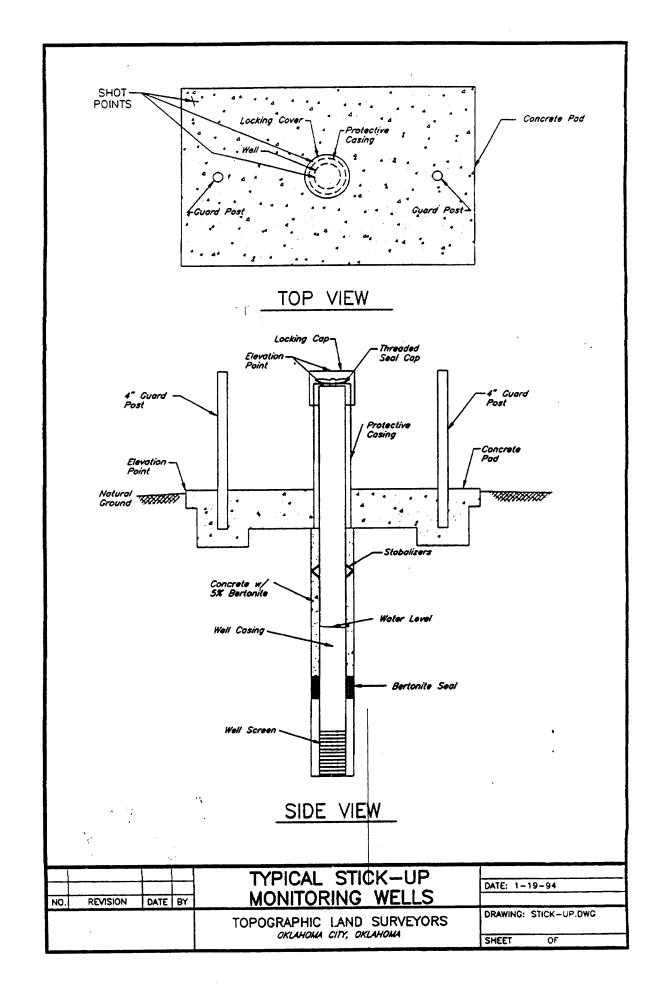
In addition; we determined X,Y and Z for four corners of an area in the Ordnance Disposal area as per Dan McGregor's instructions. These points were stakes set by previous contractor.

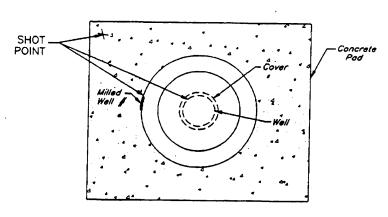
Included in this report are two drawings showing typical well layouts.

Drawing

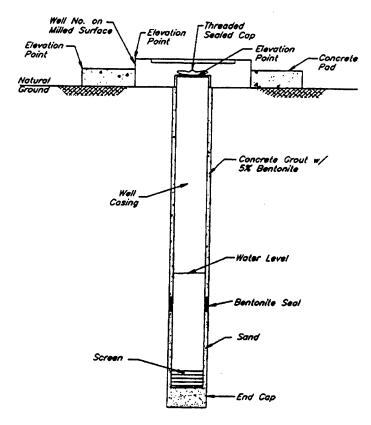
Flush.Dwg

Tower.Dwg





# TOP VIEW



SIDE VIEW

IO. REVISION DA	ATE BY	TYPICAL FLUSH MOUNT MONITORING WELLS	DATE: 1-18-94
		TOPOGRAPHIC LAND SURVEYORS	DRAWING: FLUSH.DWG SHEET OF

Tinker AFB	Factors	
	Factors.txt	
Calculations for Grid Distance		·-···
Formula Used 1-(1250)/(20,906,000)	0.9999402086	Elevation Factor
Elevation average is 1250		
Elevation average is 1200		
Grid Factor from USGS Tables		
Average Latitude is 35-25	1.0000306000	Crid Forder
	1.000030000	Grid Factor
Combination Factor is multiple of these	0.9999708067	Combo Factor

### Diskette Files

Disk Labeled IDO-5001

#547295

Text Files and Final Reports

## **FILE NAME**

# DESCRIPTION

Report.WPS Microsoft Works file of final report

Report.TXT ASCII file of final report.

Finals. WB1 Quattro Pro for Windows data base

All areas, control and Factors

NAD-83, NAD-27

Finals.WK3 1-2-3 V.3.x database

All areas, control and Factors

Hcl.TXT ASCII of HCL Area Spill.TXT ASCII of Spill Pond

Sludge TXT ASCII of Sludge and Pesticide

Fuel.TXT ASCII of Fuel Truck
Ordance.TXT ASCII of Ordnance area
Fire.TXT ASCII of Fire Training
FireC.TXT ASCII of Fire Control

NAD83.TXT ASCII of X,Y,Z and Description NAD27.TXT ASCII of X,Y,Z and Description

Control.TXT ASCII of X,Y,Z and Description of control monuments.

Factor.TXT ASCII of grid/elevation factors used in calculations.

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SE47   Track	dge Dorbu Beds	SE45		9	46693.176	654086.896			153166.188	2177548.973
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SEG6		SE41			46360.622	653942.053	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s		152075.442	2177072.383
SEIGH   1985   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987									_	
SE08	. Tank	SE06		TOPS:	46999.293	656307.763		AN AN	77.7	2184833.870
SE16	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	SE08		*	48012.200	656807.677	200		20.77	2186473.977
SE16		PR07			47640.475	656374.729	3		Acres 1	2185053,591
SE16										
SE16   Se16   Se16   Se16   Se1657.523   Se16   Se1657.523   Se16   Se1657.523   Se16   Se16   Se1657.523   Se16   Se1657.523   Se16   Se1657.523   Se16   Se1657.523   Se16   Se1657.523   Se16   Se1657.523   Se1	Inance Disposal	SE16	Ę		44935.219	656910.278	200	2155213 140	147398.529	2186810.565
SE16		PR02:			44519.766	656757.523	<u></u>	22 H257	146025.508	2186309.389
SE10   W1 8.4   1.05   4544.255   656655.015   3478.66   149134.216   149134.216   149134.216   149134.216   149134.216   148263.946   149134.216   148263.946   149134.216   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946   148263.946		SE15	i,	777	44874.549	656322.201	22	2455265.157	147199-504	2184881.187
SETO   PRO3   PRO3   PRO4 255   B506250 U15   PRO3   PRO5   PRO	Twenty Backs								-	0400070 400
SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03   SE03		SE 20			45404.255	610.65969				2103373.10
SE03         WALTH CONTROL         47481 646         656307.338         A Property of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control		SUNT		0.63	43778-40N	02/014:72		S. A. S.	-	F3.001 /01.2
SE03   SE04   SE05										
SE19         absc/15         202.00         44134.062         656649.276         275,636.027         144770.084           SE33         abst/161         3.200.37         45572.014         654847.132         3.48447.301         148487.3024           SE38         384.44.7         3.200.00         45560.105         653075.745         4.500.00         4500.00         45726.546         654009.317         2.400.00         3.740.00         5.400.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.740.00         3.	thers	SE03	Ė	228	47481.646	656307.338		215224 994	155752 633	2184832.489
284.54 1280.37 45572.014 654847.132 2 2 887.21 148487.224 148487.224 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2 853975.745 2		SE19	8	282	44134.062	656649.276		: 9335 £	144770.084	2185954.242
284.517 (200.00) 45560.105 653975.745 (1.0.00) 2149567.72 149648.783 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00) 217.72 (1.0.00)		SE33	79	0.37	45572.014	654847.132			149487.824	2180041.762
382-527, 1-255-01 45726-546 654009-317 25 5486 554009-317		SE38	Z	883	45560.105	653975.745			149448.783	2177182.896
			3		45726.546	654009.317			149094 849	2177293.048

Colculations for Grid Distrance  Formula Used  Examples average is 1750  Core Factor from USCS Tables  Average Lathurk is 25.25		
Elevation average is 1560 circles and Factor from USGS Tables.  Average Lattitude is 25-25	0.9999402086	Elevation Factor
Ciri Factor from USGS Tables  Average Latitude Is 26-25		
Grid Faction from USGS Tables Average Latitude is 36-25		
Grid Factor from USGS Tables Average Lattacks is 25-25		
Average Latitude Is 26-26		
Venge Lettude is 95-25	1.0000308000	Grid Factor
	79080108080	Combo Factor
Combination Factor is multiple of these		-

pographic	Topographic HM-A File	HCL Tank								
	NAD-83 Feet						CANAL STATE		41	
Description Northing	Northing	Easting	Elevation	Northing		Easting Elevation	Northing		Easting Elevation	
SB-045	153284.190	2153636.064	1275.110	46721.114	656,429.578	388.654	153257.757	153257.757 2,185,233.520 1275.110	1275.110	
28044		1	1275.980	46890.088	1		153812.059	153812.059 2,185,218.954	1275.980	
SB-042		2153620.517 1276.230	1276.230	46985.016	656,424.839		154123.573	154123.573 2,185,217.979		
SB-043		1 1	1275.830	47075.075			154419.041	154419.041 2,185,201.941	1275.830	
				Conversion Factor			NAD-27 Derived with			
				Meters X 3.28083337			Corpscon Program			
							-	-		
				3.28083337						
									_	

FROM TOPOGRAPHIC COMPRHIES

	Topographic HM-B File	Spill Pond							
	NAD-83 Feet			NAD-83 Mades			NAD-27	***	
Description Northing		Easting	Elevation	Northing	Easting	Elevation	Northing	Easting	Elevation
SB-019	150763.571	150763.571 2148028.472	1227.435	45952.828	654,720.380	374.123	150737.212	50737.212 2,179,625.925	1227.435
SB-020	150782.180	150782.180 2148011.904	1226.202	45958.500	654,715.330	373.747	150755.821	150755.821 2,179,609.357	1226.202
			-						
				Conversion Factor			NAD-27 Derived with		
			-	Meters X 3.28083337			Corpscon Program		
				3.28083337					
			<u>_</u> -						

	OM	Studios and Posticide	cide	Conversion	3.2000333/	Birrian annual			
i opogiapine	NAME OF EGGS		-	MAD-83 Meters			NADAZ	1	
	3			Northing	Easting	Elevation	Northing	Easting	Elevation
Description	Northing	EMERSING CHECKEROWS		A. III DIONI					
		970 70031 20	000 900	18729 867	654006.782	373.969	153285.911	2177284.758	1226.929
SB-029	153312.251	0/7/000417	000 300	48740 210	854005 748	373.673	153320.501		1225.960
SB-030	153346.842		008.077	46745 R23	654005 870	373.730	153338.949	_	1226,145
SB-031	153365.289	2145684.283	1220 145	16746 907	854012 152	373 693	153340.504	_	1226.028
SB-032	153366.845		1226.026	46/46.307	024012.132	ĿĹ	153243 640	L	1226.205
SR-033	153369,982	2145725.373	1226.205	46/4/.263	024010.284	1.	452244 088	1.	1225 884
CB 024	153367 428	2145750.652 1225.884	1225.884	46746.485	654026.099		19394 1000		1227 087
Page Charles	153127 504	2145660 862 1227.987	1227.987	46734.316	653998.731	_	153301.104	1	4200 262
WCorrect	13000 F		1228 252	46733.750	653999.189	374.372	153299.307	1	707 0771
Brass I ag	040.07070		1227 880	46733 753	653999.366	374.259	153299.317	_	- 1
MW2-67A	153325.650		2027 043	46736 538	653998 580	374.277	153308.454		_
NWCorPad	153334.792		787.777	16726 BAK	663000 305	1_	153306.246	2177260.227	1228.136
BrassTag	153332.586		1228.130	407.50.005	653999 218	L.	153306.771		1227.749
MW2-67B	153333.109	2145662.460 1227.749	127.748	46704 483	65200R 924	L.	153267.920	2177258.977	1227.875
SG-021	153294.259		1227.875	40/24.103	900 200039		153478 575	L	1227.450
SG-027	153504.913		1227.450	46/88.391	023887.280		152458 818	L	1227.773
NWCorPad	153485.156		1227.773	46/82.369	270.100400	1	162466 224	1	1227.992
Brace Tan	153482.661	2145670.729 1227.992	1227.992	46781.608	654001/38	L	133430.34	-	1
MAD 68A	153483 317	2145670.331 1227.639	1227.639	46781.808		_1	100400.87		L
NUA/CorDad	153498 329	2145667.974	1227.737	46786.384			133411890	1	L
Desc.Ton	152497 345		1227.801	46786.084			1534/1.000	1	1
ANA CAR	153496 783	L	1227.501	46785.913			1554/0/450	1	1
200 AV	153513 044	_	1225 832	46790.869			133400./04		Ľ
250	152461 953	L	1226.184	46775.296			153435.613		1
15000	153403 851	1_	1227.352	46757.587	653964.417		153377.514		
200	152478 151	Ĺ.	1227.388	46780.233			153451.811		1
20000	162426 514	1	1225 188	46767.542	653980.466		153410.174		
20-028	Lac of test	L.	1225 367	46763.208	_		153395.948		_
200	705 003634	-	1225 408	46793.080			153493.958		-
SB-030	133320.43	Ţ	1225 822	46791.724	654017.689	9 373.631	153489.509		1
SB-03/	103010.048		1225 307	46791.689		4 373.502	153489.394		
SB-038	57.010001	j	1	46813 712		5 374.370	153561.649		
SG-030	153587.989		-13	46805 501		9 374.456	153535.004		
SG-034	153561 346	1		46795 922		L.	153503.281		}
SG-035	153529.622		- į -	AA7AA 058	  -	L.	153477.479		_
NWCorPad	153503.82		-!'	16787 257		1	153475.180		`
BrassTag	153501.52		- 1	46787 452			153475.491		
MW2-66B	153501.83	e i	- 1	48700 756		7 374.435	153486.331		_[
NWCorPad	153512.67	5 2145892.637	- 1	46700 275		+	153485.081		
Brass Tag	153511.42		1728.001	40190.313		1.	153484.356		2 1228 209
MW2-86A	153510.700	0 2145894 300 1228 208	1228.209	40/80.15		1			

Topographic	HM-D	Fuel Truck				X (f)		17.00	
	NAP.83 Feet								Elevation
	3		Paraties	Northing	Easting	Elevation	Northing	Casaing	
Concrete	MOLENEY								
				300 01631	858021 202	394 852	148749.069	2186879.522	1295.444
<b>NWCorPad</b>	1 148775.507	2155	1295.444	COO.OP.C.		305 835	148747.163	2186881.208 1298.011	1298.011
TooCap	L	2155283.795	1298.011	497.045.04		305 664	148747 160	2186881.244	1297.780
LIMO-59		2155	1297.780	45346.263		020.000	148654 478		1295.503
NAMCorpad	Ĺ	2155133.601	1285.503	45318.033			448A52 028		1297.910
Tool a		2155	1297.910	45317.560			448857 087	2186732 714	1297,669
INAPA	1	1	1297.669	45317.571	_		140032.804	2186678 134 1293.606	1293.606
11000	148684 532	2155	1283.606	45319.135			1488K7 108		1294 38
2000	Ļ	2156	1294.398	45318.862			140031.180		1295.64
SP AS		2155	1295.649	45326.439		000	449688 060		1295.28
8C0 8S		2155		45328.543			448748 426		1295.33
CB 025		215	1295.337	45337.436			440744 403		1295.45
200	Ĺ	215	1295.452	45345.442			140747474		1295 64
20-00		2456	1295.640	45348.273			146/4/.120		1206 34
20-023		3 3	1305	45351.987	656896.774	_	148765.875		5.507
SG-003		25		16254 364	L		148763.832		1285.42
SB-021	`	2155		15344 387	L	394 962	148740.941		3, 1285.80
SB-022		215		000 90037			148681.693	2186692.623 1295.822	3 1295.82
SB-027	7 148708.128	215		45320.320			148718 373		1 1295.791
NIMCORPA	Ĺ	9 2155092.856	1295.791	45337.508			148717 KOR		1295.88
o de constant	Ĺ	215	1295.890	45337.244			100 41 FOX 1		2 1205 58
POPER IO		215		45337.048	8 656873.835	394.890	146/10:003		
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Tonographic HM.F File	1	Ordnance							
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	NAC-OS LEGI		Thorasion	Northing	Eastino	Easting Elevation	Northing		Easting Elevation
Description Northing	Northing	Easung	Ciavanon						
		-	1311 061	14836 551	656657.377	399.612	146418.665	2185980.834 1311.061	1311.061
SB-014	SB-014 146445.086		200	7828 783	656648.841	399.341	146386.651		1310.171
SB-013	SB-013 146413.073	-1	2000	44837 407	656641 089	1	146421.474	L	1310.433
\$8-011	\$8-011 146447.893	ļ	2	AAA.2 888	656638 639	1_	146439.390		1310.473
SB-012	SB-012 146465.811			FT 1 ANSALA	656645 299	1	148515.850	2185941.209 1311.318	1311.318
SB-010	SB-010 146542.271	-	20000	CTT 0CTA	656638 810	399,232	146694.980		1309.813
<b>WCorSite</b>	NWCorSite 146/21.400	- 1	00000	44638 472	R58597 831	1	146424.969	2185785.474 1308.51	1308.511
SWCorSite	SWCorSite 146451.388	- [		44604 446	REGRA 488	308 808	146279.439	L	1308.422
SECorSite	SECorSite 146305.859	2154478.943	1308.422	CIII was the	2000000	100	4 465 46 704	L	1208 20
NFCocsite	NECocsite 146573.205		1306.203	44675.602	656/2/.004	386.131	140340.70	1	22.00
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NWCorPad Brasslag MW2-64A	No. of London	E-select	Bevellog	Northing	Easting	Elevation	Northing	Easting	Elevation
NWCorPad Brasstag MW2-64A	Towns to the								
Brasstag MW2-64A		20000	1248 117	45872 251	655431.737	379.817	150472.826	2181959.759	1246.117
MV2-64A	150489.212		10.000	45871 48R	855431 410	379.883	150470.323	2181958.686	1246.334
MW2-64A	150496.710	2150361.24	1240.334	24 14034	855431 A17	379 797	150470.205	2181959.365	1246.052
La Att Cooped	150496.592		1240.052	43071.004	866424 224	370 705	150469 991	2181967.941	1245.748
	150496.378			436/1.36/	000404.60	037.076	150487 BA2	2181987 209	1245.897
Brace Tan	150494 048	L	1245.897	45870.677	000 #C#CC0	3/8/130	150467 402	2181087 757	1245 588
L	150492 787	1	1245.586	45870.598	655434.175	3/8.633	130407.403	Z101307.131	1242 264
	4 E0113 765	1		45846.207	655454.150	378.977	150387.380	2182033 281	1243.301
	150413 /05	2150437 448		45845.965	655454.637	379.038	150386.585		1243.361
BRASSTAG	130412.9/1	4	ľ	45845.821	655454.780	378.954	150386.113		1243.284
MW2-63B	150412.488	4		45R47 339	855456.444	379.059	150391.093	2182040.817	1243.630
NWCORPAD	150417.479	4		45847 402	RESAST 125	379 108	150390.611	2182043.052	1243.790
BRASSTAG	150416.999	_		45946 006		378 985	150389.964	_	1243.387
MW2-63A	150416.351	_		45040,000		170 707	150445 859	L	1246.052
NWCORPAD	150472.247	_		43004-035		270 883	150444 701		1246.266
RRASSTAG	150471.088		`	45863.079	0004000	200.020	450444 547	L	1245 940
MA2-628	150470.906	_		45863.623	000400040	378.702	160440 384	1	1246 409
NAMPORDAD	150475.671	<u>_</u>		45865.078		3/8.800	150447 983	1	1246 531
DDACCTAG	150474 251	L	1246.531	45864.643		3/9.843	130441.003	1	1248 213
2000	4E0474 278	L	1246.213	45864.651	655490.383	3/9.840	15044/.08U	]	207730
MWZ-02M	130414-61	2150500 145		45941.404	655501.180	381.342	150699.702		021.1621
WCORPAD	180.02/001	┵		45940.970		381.388	150698.278		1251 2/0
BRASSTAG	120/24.000	1		45940 971	655501.879	381.298	150698.281		1250.976
MW2-65A	150/24.6/1	1		45045 B10	L	381.287	150714.157	2182180.885	1250.939
NWCORPAD	150740.546	21505063		46045 304	L	381 333	150712.792	2182182.571	1251.089
BRASSTAG	150739.181	_		100.00 P			150712 875	2182183 201	1250.812
MAD-65R	150739.263	2150585.7		40845.41B				1	
200		ပြ	3.28083337						
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ODOOLSDAN	Topographic HMA-G File	Fire Control				-			
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	NAD-83 Feet			NAD-83 Meders					
Procedure Northing		Easting	Elevation	Northing		Easting Elevation	Northing	Easting	Elevation
CD 048	147211 123	147211 123 21508AG 702 1288 631	1268 631	44870.043	655,591.571	386.679	147184.752	147184.752 2,182,484.119	,
20000	147032 432	147032 432 2150889 734	734 1270 381	44815.574	655,592,495	387.207	147006.049	147006.049 2,182,487.149	
20000	448000078		028 1273 784	077 770		388.250	146783.596	146783.596 2,182,487.440	1273.784
20-010	448611 005		336 1275 957	44687.425	ı	388.912	146585.615	146585.615 2,182,487.746	1275.957
202	200	2000017							
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SB-045	450057.757	0405000 500	ļ <u></u>
SB-044	153257.757 153812.059		· · · · · · · · · · · · · · · · ·
SB-042	154123.573	! = · · · = · · · · · · · · · · · · · ·	1 · · · (
8B-043	154419.041	**	
SB-019	150737.212		
8B-020	150755.821		
8B-029 8B-030	153 <u>285.911</u> 153320.501	2177284.758	
8B-031	153338.949	2177281 365 2177281.766	
SB-032	153340.504	2177302.376	
SB-033	153343.640	2177322.855	
8B-034 NWCorPad	153341.088	2177348.133	
BrassTag	153301.164 153299.307	2177258.344 2177259.879	1227.987 1228.252
MW2-67A	153299.317	2177260.427	
NWCorPad	153308.454	2177257.848	
BrassTag	153306 246	2177260.227	1228.136
MW2-67B 8G-021	153306.771	2177259.941	
8G-027	153267.920 153478.575	2177258.977 2177253.637	1227.875 1227.450
NWCorPad	153458.818		1227.773
BrassTag	153456.321	2177268.214	
MW2-68A	153456.977	2177267.817	1227.639
NWCorPad BrassTag	153471.990	2177265.458	1227.737
MW2-68B	153471.008 153470.445	2177267.377 2177267.505	1227.801 1227.501
58-035	153486.704	2177283.644	1225.832
88-041	153435.613	2177169.986	1226.184
8G-045 8G-043	153377.514	2177145.768	1227.352
88-039	153451.811 153410.174	2177145.265 2177198.420	1227.388 1225.186
SB-040	153395.948	2177174.077	1225.367
8B-036	153493.958	2177306.573	1225.408
SB-037	153489.509	2177320.543	1225.822
8B-038 SG-030	153489.394 153561.649	2177346.511 2177249.107	1225.397 1228.246
8G-034	153535.004	2177378.089	1228.528
5G-035	153503.281	2177378.177	1228.755
NWCorPad BrassTag	153477.479	2177489.938	1228.566
MW2-66B	153475.180 153475.491	2177492.330 2177491.726	1228.786 1228.424
NWCorPad	153486.331	2177490.122	1228.458
BrassTag	153485.081	2177491.772	1228.601
MW2-68A	153484.356	2177491.782	1228.209
NWCorPad TopCap	148749.089 148747.163	2186879.522 2186881.208	1295.444
MW2-69	148747.160	2186881.244	1298.011 1297.780
NWCorPad	148654 478	2186731.015	1295.503
TopCap	148652.926	2186732.695	1297.910
MW2-61_ 	148652.962 148658.094	2186732.714	1297.669
8G-007	148657.198	2186678.134 2186767.383	1293.606 1294.398
SB-028	148682.056	2186750.834	1295.649
SB-026	148688.959	2186731.291	1295.280
88-026	148718.136	2188723.049	1295.337
\$8-024 88-023	148744.402	2186718.650 2186749.887	1295.452 1295.640
8G-003	148765.875	2186768.271	1295.340
8B-021	148763.832	2186704.005	1295.427
\$B-022	148740 941	2186693.033	1295.804
SB-027_ NWCorPad	148681.693	2186692.623	1295.822
Smestag	148718.373 148717.506	2186690,271 2186691.074	1295.791 1295.890
MW2-60	148716.863	2186891.012	1295.587
\$B-014	148418.665	2185980.834	1311.061
88-013	146386.651	2185952.828	1310.171
58-011 88-012	146421.474	2185927.396 2185919.358	1310.433 1310.473
\$B-010	146515.850	2185941.209	1311.318
NWCor8ite	146894 980	2185919.921	1309.813
SWCor8ite	146424.969	2185785.474	1308.511
SECorSite NECorSite	146279.439	2186076.341	1308.422
NWCorPad	146546.781 150472.826	2186209.2681 2181959.759	1306.203
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Brasstag	150470.323	2181958.686	1246.334
MW2-64A	150470 205	2181959.365	1246.052
NWCorPad	150469.991	2181967.941	1245.748
BrassTag	150467.662	2181967.209	1245.897
MW2-64B	150467.403	2181967.757	1245.586
NWCORPAD	150387.380	2182033.291	1243.361
BRASSTAG	150386.585	2182034.889	1243 561
MW2-63B	150386.113	2182035.358	1243 284
NWCORPAD	150391.093	2182040.817	1243.630
BRASSTAG	150390.611	2182043.052	1243.790
MW2-63A	150389.964	2182043.019	1243.387
NWCORPAD	150445.859	2182138.117	1246.052
BRASSTAG	150444.701	2182139.902	1246.266
MW2-62B	150444.517	2182140.558	1245.940
NWCORPAD	150449.284	2182150.03	1246.409
BRASSTAG	150447,863	2182151.526	1245.531
MW2-62A	150447.890	2182152.168	1246.213
NWCORPAD	150699.702	2182187.591	1251.120
BRASSTAG	150698.278	2182190.524	1251.270
MW2-85A	150698.281	2182189 884	1250.976
NWCORPAD	150714.157	2182180.865	1250.939
BRASSTAG	150712.792	2182182.571	1251.089
MW2-65B	150712.875	2182183.201	1250 812
SB-018	147184.752	2,182,484.119	1268.631
8B-017	147006.049	2,182,487.149	1270.361
8B-016	146783.596	2,182,487.440	1273.784
8B-016	146585.615	2,182,487.746	1275.957
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46721.114	656429 578	
46890.066	856425 137	388.654 SB-045
46985.016	656424.839	388 919 SB-044
47075,075		388 996 SB-042
45952.828	656419.950	388.874 SB-043
46958,500	654720.380	374.123 SB-019
46729.667	654715.330	373.747 SB-020
	654006.782	373.969 SB-029
46740.210	654005.748	373.673 SB-030
46745.833	654005.870	373.730 SB-031
46746,307	854012.152	373 803 58 031
46747.263	654018.394	373.693 SB-032
46746.485	654026.099	373.748 SB-033
46734.318	653998.731	373.650 SB-034
46733,760	653999 199	374.291 NWCorP
46733.763	653999.366	374.372 BrassTag
46736.538		374.259 MW2-67
46725.865	653998.580	374.277 NWCorPa
	653999.305	374.337 BrassTag
46736.025	653999.218	374.219 MW2-678
46724.183	653998.924	374.257 SG-021
46788,391	653997.296	374.128 SG-027
46782.369	654001.072	374 226 1040
46781,608	654001.739	374.226 NWCorPa
46781.808	654001.618	374.293 BressTag
46786,384		374.185 MW2-68A
48786,084	654000.899	374.215 NWCorPa
46788.913	654001.484	374.234 BrassTag
	654001.523	374.143 MW2-88B
46790.869	654006.442	373.634 SB-035
46775.296	653971.799	373.742 SB-041
48767,887	653964.417	374.098 SG-045
46780.233	653964,264	374.109 SG-043
46767,542	653980.466	
46763.206	653973.046	373.437 SB-039
46793,080		373.493 SB-040
46701.724	654013.431	373.505 SB-036
46791.689	654017.689	373.631 SB-037
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46813.712	653995.915	374.370 SG-030
46805,591	654035.229	374.456 SG-034
. 46795.922	654035.256	374.525 SG-035
46788.058	654069.321	374.468 NWCorPac
46787.357	654070.050	374.535 BrassTag
48787.452	654069,866	374.424 MW2-66B
46790,786	654069,377	
46790.375	654069.880	374.435 NWCorPad
46790.154		374.478 BrassTag
	654069.883	374.359 MW2-88A
48346,865	656931.293	394.852 NWCorPad
46946,284	656931.807	395.635 TopCap
45346.283	656931.818	395.664 MW2-59
46318.033	656886.028	394.870 NWCorPad
48317,560 48317,571	656886.540	395.604 TopCap
48317.571	656886.546	395.530 MW2-61
**************************************	658869.910	394.292 SG-011
45319.135 45318.862	656897.113	
45326.439		394.533 SG-007
	656892.069	394.915 SB-028
46328,643 46337,436 46345,442 46346,273 46348,273	656886.112	394.802 SB-026
**** <b>4033/.43</b> 5	656883.600	394.820 SB-025
45345.442	656882.259	394.855 SB-024
45346,273	656891.780	394,912 SB-023
45351,987	656896.774	394.820 SG-003
45351.364	656877.795	394.847 SB-021
45344,387	656874.451	394.962 SB-022
48328,328		
45337.508	656874.326	394.967 SB-027
4844 A4	656873.609	394,958 NWCorPad
46337.244	656873.854	394.988 Brasstag
	656873.835	394.896 MW2-60
44656.551	858857.377	399.612 SB-014
44626,793	658648.841	399.341 SB-013
44637.407	656641.089	399.421 SB-011
44642.868	. + . =	
	656638.639	399.433 SB-012
44666.173	656645.299	399.691 SB-010
44720,772	656638.810	399.232 NWCorSite
44720,772 44638,472	656597.831	398.835 SWCorSite
44594.115	656686.488	398.808 SECorSite
44878.802	658727.004	398.131 NECorSite
45872,251		

45871.488	655431.410	379.883 Brasstag
45871.452	655431.617	379.797 MW2-64A
45871.387	655434.231	379.705 NWCorPad
45870,677	655434.008	379.750 BrassTag
45870.598	655434.175	379.655 MW2-64B
45846.207	655454.150	378.977 NWCORPAD
45845.965	655454.637	379.038 BRASSTAG
45845,821	655454.780	378.954 MW2-63B
45847,339	655458.444	379.059 NWCORPAD
45847.192	655457.125	379.108 BRASSTAG
45846,995	655457.115	378.985 MW2-63A
45864.032	655486.101	379.797 NWCORPAD
45863.679	655486.645	379 863 BRASSTAG
45863.623	655488.845	379.763 MW2-62B
45865,076	655489.732	379,906 NWCORPAD
45864.643	655490.188	379.943 BRASSTAG
45864,651	655490.383	379.846 MW2-62A
45941.404	655501.180	381.342 NWCORPAD
45940,970	655502.074	381.388 BRASSTAG
45940.971	655501.879	381.298 MW2-65A
45945,810	655499.130	381.287 NWCORPAD
45945.394	655499.650	381.333 BRASSTAG
45945.419	655499.842	381.248 MW2-65B
44870.043	655591.571	386.679 SB-018
44815,574	655592.495	387.207 SB-017
44747.770	655592.584	388.250 SB-016
44687.425	655592.678	388.912 SB-015

NA0.83

# APPENDIX E GEOTECHNICAL, CERTIFICATES OF ANALYSIS, AND CHAIN OF CUSTODY



# GEOTECHNICAL LABORATORY

409802

# CERTIFICATE OF ANALYSIS

Routed to (F, 72, K in 3/21/94

March 16, 1994

Karmen Deane IT Corporation 5307 Industrial Oaks Blvd. Suite 160 Austin, TX 78735

ETDC Project Number: 483500.094.01 P.O. Number: 4627-341

Job Number: 414627

This is the Certificate of Analysis for the following samples:

Client Project ID:

Tinker AFB

Date Received by Lab:

October 28, 1993

Number of Samples: Sample Type: Two (2) Soil

# I. <u>Introduction/Case Narrative</u>

Two (2) soil samples were received by IT/ETDC on (October 28, 1993) for analyses of grain size distribution, cation exchange capacity, moisture content and permeability. Not all samples required all parameters.

Please see Appendix A, the Sample Number Cross Reference List; Appendix B, the Analysis Results; Appendix C, the Chain of Custody and Request for Analysis Records.

Reviewed and Approved:

Beverly L. Leamon

Project Manager, Geotechnical Services

Keverly Leamen

Page 2 of 9
Karmen Deane
IT Corporation
March 16, 1994
Client Project

Client Project ID: TINKER AFB ETDC Project No.: 483500.094.01

IT ENVIRONMENTAL TECHNOLOGY DEVELOPMENT CENTER OAK RIDGE, TN (615) 482-6497

> Routed to CF, TL, KA 3/21/94

# II. Analytical Results/Methodology

REFERENCES: Annual Book of ASTM Standards, Section 4, Construction, Volume 04.08, Soil and Rock; Dimension Stone; Geosynthetics. Volume 4.02, Concrete and Aggregates.

Grain Size Distribution Cation Exchange Capacity Moisture Content Permeability ASTM D422 EPA, Method 9081 ASTM D 2216 ASTM D 5084

# III. Quality Control

Except for cation exchange capacity analysis, quality control checks such as duplicates and spikes (QC samples), are not normally applicable to geotechnical testing. This is due to the inability of obtaining samples with known characteristics, the heterogenous nature of the samples, and Quality Control procedures built-in to the analytical method.

QC measures to ensure accuracy and precision of test results include the following:

- 100% verification on all numerical results all raw data entries, transcriptions and calculations entered by lab technicians are checked, recalculated and verified. Most data calculations are performed by computer programs.
- Data validation through test reasonableness summaries of all test results for individual reports are reviewed to determine the overall reasonableness of data and to determine the presence of any data that may be considered outliers.
- Quality control procedures are built into most standardized geotechnical procedures. For example, many analyses routinely call for a re-analysis, specifying an acceptance criteria.
- Routine instrument calibration all instruments, gauges and equipment used in testing are calibrated on a routine basis. All instrument calibration follows ASTM or manufacturer guidelines.
- Maintenance of all past calibration records records and certification documents of all instruments, gauges and equipment are updated routinely and maintained in the Quality Control Coordinators Quality/Operations files.

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Karmen Deane
IT Corporation
March 16, 1994

Client Project ID: TINKER AFB ETDC Project No.: 483500.094.01

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• Use of trained personnel for conducting tests - all technicians are trained in the application of standard laboratory procedures for geotechnical analyses as well as the quality assurance measures implemented by IT.

# IV. Data Qualification

Fine sieve and hydrometer results occasionally overlap due to organic debris, soluble salts or other contaminants contained in the sample. Data points are plotted as calculated. No attempt has been made to curve-fit the grainsize data points.

The cation exchange procedure included analysis of a blank, duplicate and a matrix spike. The blank value was found to be near the method detection limit of 0.05 mg/l for sodium analysis. The relative percent difference for the duplicate sample was 3.8%. The matrix spike recovery was 73 %.

Moisture contents are calculated in accordance with ASTM D 2216. Given results are based on the sample dry weight, not on the sample wet weight as is common in analytical chemistry.

Appendix A

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Karmen Deane
IT Corporation
March 16, 1994
Client Project ID:
ETDC Project No.:

TINKER AFB 483500.094.01

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3/2//90

### CROSS-REFERENCE LIST

ETDC SAMPLE NO.	CLIENT SAMPLE NO.
ETDC-4462	

Appendix B

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Client Project ID: TINKER AFB ETDC Project No.: 483500.094.01 IT ENVIRONMENTAL TECHNOLOGY DEVELOPMENT CENTER

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# PARTICLE SIZE ANALYSIS **ASTM D 422**

Project Name:

**TINKER AFB** 

Client Number:

B310336-18A

Project Number: 483500.094.01

ETDC Number:

ETDC-4462

Specific Gravity = 2.6500

**Assumed** 

Moisture Content = NA

# SIEVE ANALYSIS

	Sieve	Diameter	Percent	
С	No.	mm	Finer	
0	3"	75.000	100.0%	
Α	1.5"	37.500	100.0%	
R	0.75"	19.000	100.0%	
S E	0.375"	0.375"	9.500	100.0%
	#4	4.750	100.0%	
	#10	2.000	100.0%	

	Sieve	Diameter	Percent
	No.	mm	Finer
F	#20	0.850	100.0%
1	#40	0.425	99.8%
N	#60	0.250	99.6%
E	#100	0.149	99.2%
	#140	0.106	97.8%
	#200	0.075	94.2%

# HYDROMETER ANALYSIS

	Diameter	Percent		
	mm	Finer		
н	0.05528	87.3%		
Y	0.04129	74.9%		
D	0.03006	67.8%		
R	0.01992	56.5%		
О М	0.01195	45.2%		
E	0.00856	42.1%		
T	0.00608	41.1%		
Ε	0.00440	29.8%		
R	0.00325	3.1%		
	0.00142	0.0%		

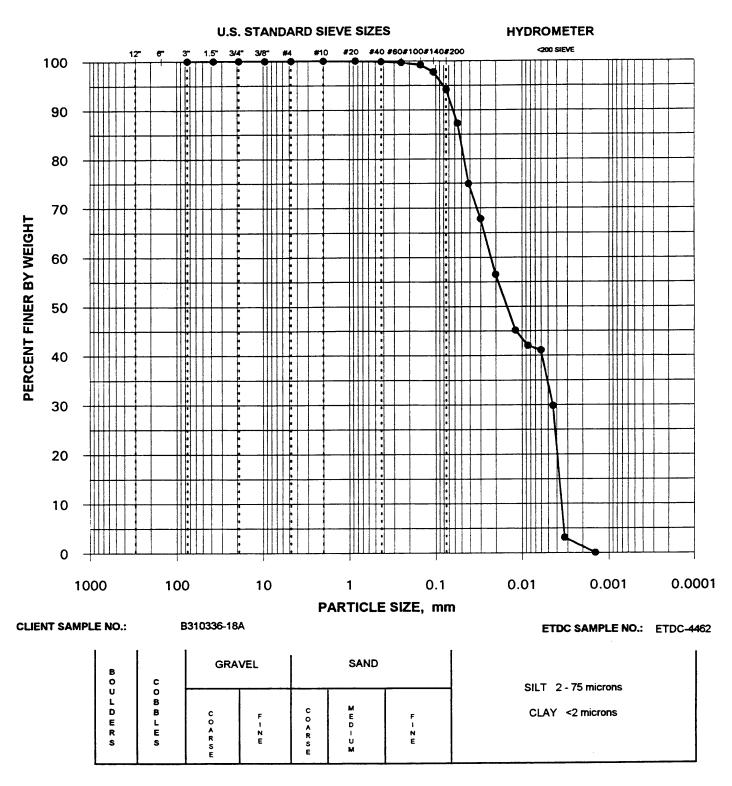
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Client Project ID: TINKER AFB ETDC Project No.: 483500.094.01

IT ENVIRONMENTAL TECHNOLOGY DEVELOPMENT CENTER OAK RIDGE, TN

OAK RIDGE, TN (615) 482-6497 Round to CF 74 3/21 00

# **TINKER AFB**



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Client Project ID: ETDC Project No.:

TINKER AFB 483500.094.01

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OAK RIDGE, TN
(615) 482-6497

7/2/10-

# MOISTURE CONTENT ASTM D 2216

PROJECT NAME:

TINKER AFB

PROJECT NUMBER:

483500.094.01

ETDC SAMPLE NO.	CLIENT SAMPLE NO.	MOISTURE CONTENT
ETDC-4462	B310336-18A	17.9%

Page 8 of 9 Karmen Deane IT Corporation March 16, 1994

Client Project ID: TINKER AFB ETDC Project No.: 483500.094.01

IT ENVIRONMENTAL TECHNOLOGY
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3/21:04

# CATION EXCHANGE CAPACITY EPA SW-846 METHOD 9081

PROJECT NAME: TINKER AFB PROJECT NUMBER: 483500.094.01

ETDC	CLIENT	WEIGHT	SODIUM	CATION EXCHANGE	RPD
SAMPLE	SAMPLE	OF SAMPLE,	CONCENTRATION,	CAPACITY,	%
NUMBER	NUMBER	GRAMS	MG/L	MEQ/100 GRAMS	•
ETDC-4462	B310336-18A	6.08	251.0	17.96	
	······································				<del></del>
	······································				
					~

^{*}RPD = RELATIVE PERCENT DIFFERENCE FOR ORIGINAL & DUPLICATE SAMPLES

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Client Project ID: 7 ETDC Project No.: 4

TINKER AFB 483500.094.01

IT ENVIRONMENTAL TECHNOLOGY DEVELOPMENT CENTER
OAK PIDGE TN

OAK RIDGE, TN (615) 482-6497

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# PERMEABILITY RESULTS

ETDC SAMPLE CLIENT SAMPLE NO. NO.		LENGTH/ DIAMETER/ WEIGHT	COEFF. OF PERMEABILITY		
ETDC-4463	B310336-18B	11.167 cm/ 3.582 cm/ 235.68 grams	4.7 E-9 cm/s		

Appendix C

Tinken 5001 TECHNOLOGY CORPORATION

**CHAIN OF CUSTODY RECORD*** ANALYSIS REGUEST AND 483500.1

E10C Samples Shipment Date 7

Lab Destination 8 Project Name/No. 1_8 3/0336

Project Contact/Phone 12512-8926684 Lab Contact 9 B, Ceamon

Carrier/Waybill No. 13 Fo LK Deane

Purchase Order No. 6 Will follow

Project Manager 4 Karmen

Profit Center No. 3

Sample Team Members 2

Reference Document No. 41660 Route (to (T) T) XN

Page 1 of

Austin Bill to:5

Report to: 10

ONE CONTAINER PER LINE Required Report Date 11 //~/0.93

	Disposal 22	ETDC 4462	ETDC 4463		[		
	Condition on 21		- 37				
	Requested Testing ²⁰ Program	4°C CEC. A. Grain,	U. Perm				
	Pre- ¹⁹ servative	2,4	7,1				
	Sample ¹⁸ Volume	1455 Liter	1 7				
	Container ¹ ′ Type	4/455	Sleeve				
0 7	Collected Type Volume	10-25-93	10.25.43				
L	Sample ¹⁵ Description/Type	B310336-18A J5420 /5011	V -188 J 5420 /5011				26: 23
7.	Sample 14 Number	B310336-18A	₹ -188				Shacial Instructions: 23

**Archive** Disposal by Lab (L Sample Disposal; ²⁵ Return to Client [] Unknown [L OC Level: ²⁷ I.[<u>]</u> II.[<u>]</u> Poison B Skin Irritant Possible Hazard Identification: 24 Turnaround Time Required: 26 Flammable Non-hazard

Rush

Normal _

[mos.

Date: Time Project Specific (specify); 1. Received by 28 10-22-63 200 Date: 1. Relinquished by 29 (Signature/Affiliation)

Date: Time: ं Time: Date: 2. Received by (Signature/Affiliation) 3. Received by (Signature/Affiliation) Date: Time: Date: Time: Relinquished by 3. Relinquished by (Signature/Affiliation) 2. Relinquishe (Signature/Affiliation)

Comments: ²⁹

MCA 3/15/9